

Environmental Limitations and Economic Development Among Gaddis of Bharmour, Himachal Pradesh, India

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ABSTRACT Transhumant Gaddis residing in Mid-Himalayan zone spend summer in their permanent homes in Bharmour and cultivate their lands, and in winter they migrate to lower hills along with their sheep and goat in and around Kangra hills. As the area remained isolated, it lagged behind in social and economic progress. The development programmes sponsored by the Government of India offer challenging opportunities for research in this area, where environmental conditions constitute a significant factor in the socio-cultural system. The socio-cultural system found in Bharmour is a reflection of the way in which the Gaddis have, by tradition adopted to a mountainous, rugged environment. To combat the environmental stresses Gaddis have developed a mixed agro-pastoral economy. They have so far been relatively little affected by the impact of the outside world. In the past their culture and especially the strong individualism it fosters, is intrinsically unresponsive to change; more important, they inhabit country whose environmental limitations restrict the usefulness of western ideas and techniques and the possibility of change.

Generally it is believed that suitable alteration in the environment which is not conducive to development to begin with, can bring about the desired results. However, in Bharmour, we are faced with situation, in which over twenty five years of continued development efforts have failed to bring about any significant change either in the environment or in the standard and style of the local Gaddis. In this context we have also mentioned development experiment, like horticulture, which failed for one reason or another. We would like to call attention of the ecologists to this situation and solicit their expert opinion as to how and to what extent changes can be brought about.

Bharmour *Tehsil* in Chamba district of Himachal Pradesh in Mid Himalayan zone is extremely backward. The people residing in the area are Transhumant Gaddis, who spend summer in their permanent homes in Bharmour and cultivate their lands. In winter, they migrate to lower hills along with their sheep and goat in and around Kangra hills. The term Gaddi is a generic name under which Rajputs, Khatris, Thakurs or Ranis and Rathis are included. Now-a-days, however, even Brahmans and Sips of this area call themselves Gaddis, because Gaddis of Bharmour have been given the status of a Scheduled Tribe by the Government of India and are entitled to certain financial benefits. Gaddis of Bharmour have become a tribe by circumstances, mainly for the sake of development in the view of their social and economic backwardness. The Gaddis are entirely Hindu, both in origin and their social organization. Hindu state in Bharmour was established around 7th century. The Brahmans and Rajputs are supposed to have arrived during 780-800 A.D., from Brahmans and Rajputs castes on the Punjab plains. The population has been stable in the area for quite a long time. It has not been dominated or strongly influenced by the Muslim, Gurkhas, Tibetans or British. The area is isolated and contact with the outside world is minimal.

The Gaddi people of Himalayas occupy an area in the Chamba district of Himachal Pradesh and along foothills of Dhaulta Dhar in the Kangra district. They are principally found in Bharmour

Tehsil of Chamba district. Only the Gaddis residing in Bharmour have been designated as Scheduled Tribes by the Government of India.

As the area remained isolated, so it lagged behind in social and economic progress. For the last twenty five years, community development programmes sponsored by the Government of India through state agencies have been operating in the area. The development programmes offer challenging opportunities for research especially in an area like Bharmour where environmental conditions constitute a significant factor in the socio-cultural system of the area (as it exists today). At this point, it may be stated that social relations, technology and environment may be treated as variables which are part of a system. The three variables are interrelated and interdependent and functioning of a system may change in response to change in any one of the variables *e.g.*, an economic change could have an effect on environment as well as social relations.

ENVIRONMENTAL CONDITIONS AND CULTURAL ADAPTATIONS

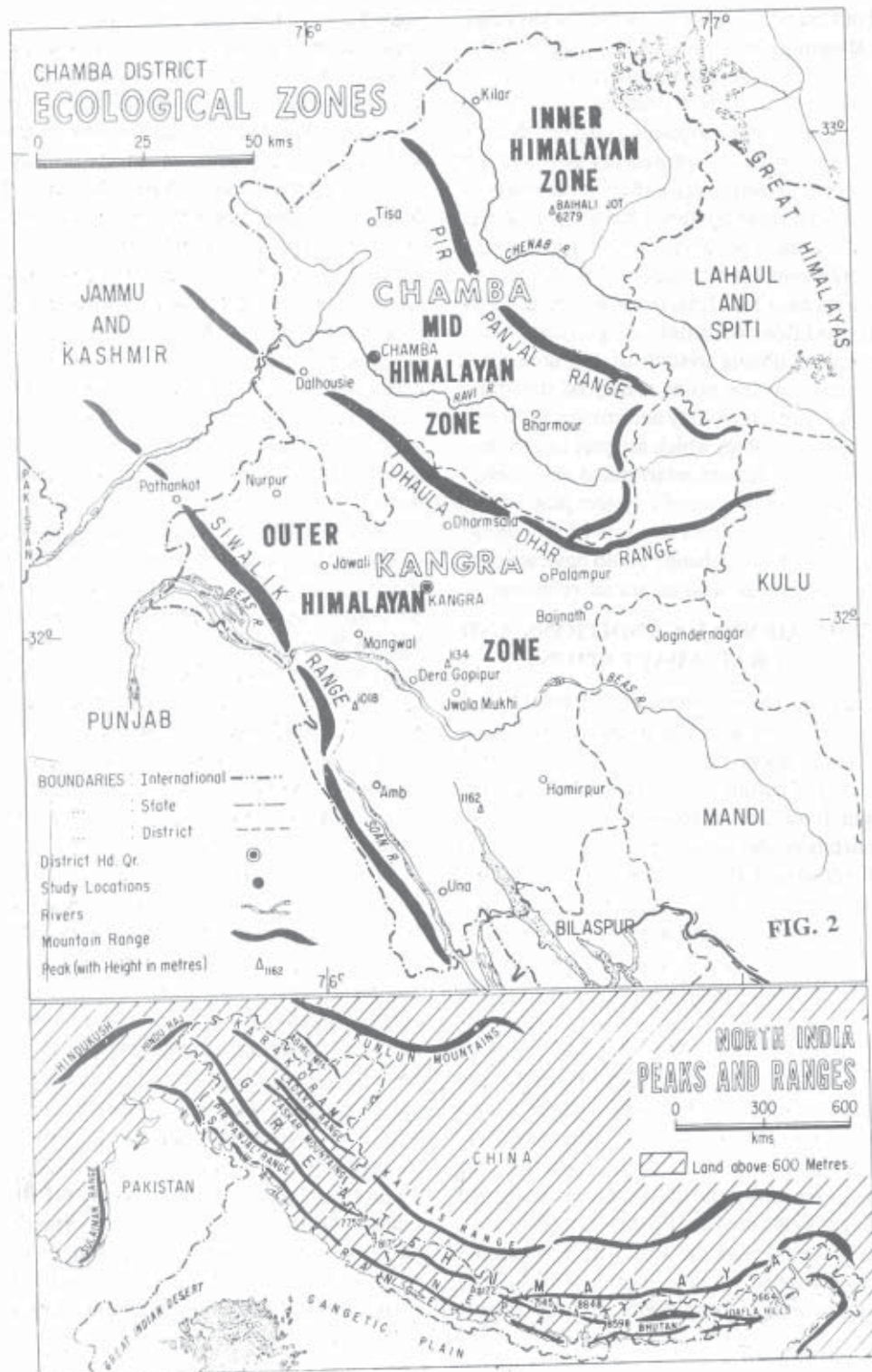
The environmental stresses to which human population in this area has to adjust are rugged topography, poorly developed soils, marginal availability of certain nutrients, low temperature, frequent frost and excessive snow. Means of transportation and communication are few due to difficult terrain. People use suspension bridges, *Trangries* or ropes to cross the rivers. Bharmour *Tehsil* headquarter lies 62 kms from the Chamba and is connected to Chamba by a motorable, single lane road and fit for heavy vehicular traffic. The road terminates at *Tehsil* headquarters. The road is useful for officials and travellers since the Gaddis, the people residing in the area still prefer to walk. During monsoon season, after a heavy shower, at few places the road usually sinks or stones and dust fall on the road, thus blocking the only link with the outside world.

Villages in the area are found on sloping ridges 600 to 3000 m above the sea level. They cannot be placed next to the river because of the very steep sides and frequent floods, nor can they be

placed above 3000 m as the season is too short, between the melting of the snow and the new snowfall for the crops too mature. At places where the plain is wider, the villages are placed one above the other or adjacent to one another. The residential pattern is of the village surrounded by their fields. Since the river bed is deep, water cannot be used for irrigation. Agricultural lands are mostly rainfed. With the increase in population and pressure on land, the fields close to the house were not enough to provide for the family. As a result, people had to look for more land in the nearby villages or for cultivable waste land. Thus it came about that Gaddi gradually ended up with land not only in their own villages, close to their residence, but also fields as far as five or six kms from their homes.

The nature of the terrain has a two fold effect on the settlement pattern. Firstly, the ruggedness of the terrain leads to hamleting of communities. Secondly, large tracts of barren and rocky land lead to their dispersal. Land holdings are very small and, very often, the different fields belonging to a family, are widely scattered. The smallness of the land holding is the result of (a) nature of the tract (b) steepness of the slopes and (c) fragmentation of land consequent upon breakup of a joint family. Steepness of the slope does not permit terracing out of large fields.

The socio-cultural system found in Bharmour is a reflection of the way in which the Gaddis have, by tradition, adapted to a mountainous, rugged environment. To combat the environmental stresses, Gaddis have developed a mixed agro-pastoral economy. Land and livestock are the principal economic resources of Bharmour. By simultaneously practicing agriculture and sheep and goat-rearing, Gaddis have developed a broader base for spreading risk factors across two different economic activities. Although agriculture provides the bulk of the staple food, the Gaddis themselves give major importance to the care and value of their sheep and goat. From these animals they obtain additional food in the form of meat and milk, wool for clothing and



cash for buying other essentials. It has been calculated that food for 192 days or 6 months and 12 days is grown in a sample village, Sachuien in Bharmour Block. Therefore, the people have to buy food for the remaining months (Bhasin, 1981, 1988). For this they need money, which is obtained by selling wool and woollen products. The presence of *Dhars* (grass lands) in the area facilitate sheep and goat rearing. Historical conditions and events have of course played their part, but they too were influenced by ecological factors. The area remained comparatively isolated up to the 7th century. The isolation was never absolute in the sense that Gaddis have always been aware of the practices and beliefs of other people. They have been in touch with the people of the lower hills while grazing their sheep and goats. During the same period their families have been working in the homes of the people in the Kangra Hills. The limited nature of the resources and specific nature of the agriculture and herding cycle are the result of the ecological conditions of the area. The grazing of sheep and goats brings them in the vicinity of lower hills or plains in the winter months. Immigrants into the Bharmour area adopted the local customs, caste, kinship, marriage and religion thus indicating that ecological adaptations mould the social relations to fit local conditions. Rajputs and Brahmans came from the plains and adjusted themselves to ecological conditions different from those of the plains. Their religious beliefs, practices and caste system, though modified by the harsh environment, still retains vestiges of the original.

The ecological conditions in Bharmour have several effects on the economic life of Gaddis. Agriculture production is reduced by the short season, low temperature, high altitude and smallness of the landholdings. Historically speaking, all the land used to belong to the *Rajah* (King) of Chamba who would rent out small fields to different families. A person was given the right to only as much land as he and his family could personally cultivate. This type of distribution prevented the emergence of any significant group of large land holders. To compensate for the

agriculture deficit Gaddis raise large flocks of sheep and goat. The mountain meadows and grazing grounds in the area facilitate the raising of sheep and goat. Accumulation of snow in winter months prevents the year-round sustenance of large flocks. Consequently, a pattern of transhumance is followed. Due to heavy snowfall for about three to four months during winter, the Gaddis generally migrate to lower hills and plains along with their flocks of sheep. During this period the main source of livelihood is sale of wool and employment of their children and women as domestic servants. The migration is necessitated because the pastures and grazing lands are covered with snow, and it is difficult to maintain large number of sheep and goats and secondly, for the selling of raw wool which is available in large quantities without any local outlet. Other secondary pursuits in the area are collecting minor forest produce, various kinds of household industries such as spinning and weaving, tailoring and beekeeping and specialized occupations such as carpentry, iron-smithy, medicine, religious and para-religious activities. More recently the increase in mercantile and government activity has created new sources of income in transport, road building, construction etc. Horticulture, while not yet significant, may become a major source of income. It cannot however be said, that environment alone drives them out of Bharmour during winter, the economic reality is equally responsible. There are families in Bharmour who do not have enough land or do not rear enough sheep and goats to meet their economic needs throughout the year. They have to look for odd jobs in lower hills, where they migrate. They work on daily wages as road labourers, wood cutters etc., and their women and children work as domestic help, thus earning their livelihood for winter months. Apart from this, wool and woollen products need some way of disposal which is not possible if they are stagnant locally. As all the local people have sheep and goats (even if they have few) they cannot sell or exchange wool and woollen products, except by way of their own consumption.

AREA—DISTRICT CHAMBA

The district Chamba is situated between north latitude $32^{\circ}45'$ and $33^{\circ}13'$ and east longitude $75^{\circ}45'$ and $77^{\circ}43'$ in the bosom of Himalayas. It is bounded on the northwest by the state of Jammu and Kashmir, on the northeast by Bara Banghal areas of Himachal Pradesh and on the southeast and south by districts of Gurdaspur (Punjab) and Kangra (Himachal Pradesh) (Fig.1). The district is wholly mountainous with altitude ranging from 600 m to 6400 m above main sea level, the inhabited area being limited up to 3000 m. The climate varies from sub-tropical to semi-arctic. The high altitude regions of the district remains snow bound for a fairly long period during the year. An area of 36 per cent of Chamba district is under forests and 54 per cent under pasture. Only six per cent of the land is suitable for plough cultivation, most of which is already being farmed (Statistical Abstract of Chamba District, 1981). The main exports are timber, corn, wool and woollen products, leather and more recently, seed potatoes and apples.

Chamba district with an area of 6528 sq. km. has a total population 3,11,147 (1981 Census) with density of 47 sq.km. It comprises 5 *tehsils*: Chamba, Bhatiyat, Churah, Pangi and Bharmour, and 2 sub-*tehsils*: Salooni and Sihunta for administrative purposes.

ECOLOGICAL ZONES IN CHAMBA DISTRICT

The habitable area of Chamba district is divided into three geographical zones, roughly separated by four mountain ranges: Hathi Dhar, Dhaula Dhar, Pir Panjal and Zaskar Range (Fig.2). Within these geographical zones human populations have different ecological adaptations ranging from sedentary farming to different kinds of transhumance (Table 1).

PHYSICAL STRUCTURE OF ENVIRONMENT—BHARMOUR TEHSIL

Location

It lies approximately between the north latitude

$32^{\circ}11'$ and $32^{\circ}41'$ and the east longitude $76^{\circ}32'$ and $76^{\circ}53'$ (Fig.3). The whole area is remarkably mountainous, the altitude ranges from 1500 m to about 6000 m above mean sea level, level and flat pieces of land are an exception to be met with. Cultivation ranges from 1500 m to about 4000 m above mean sea level. The slopes are very steep and make agriculture a difficult proposition. Because of the steepness of the slope, in the rainy seasons, good soil cover is lost and soil conservation becomes a real hazard. Land sliding is a common feature in this area.

Terrain

The terrain itself is rocky with frequent outcrops of huge boulders, slate and rock faces. According to the geology of Chamba, the mountains are formed for the most part of slate rocks of Silurian age, resting on a central mass of granitoid gneiss. The rock system is very friable and liable to erosion, and is often the cause of great difficulties in the construction and maintenance of roads. The subsoil is fairly hard, which is often fissured and near the surface, when exposed, disintegrates with comparative ease. The soil is more or less clayey or clay-loom to loam with gravel. Three main type of soils are found in the Bharmour *Tehsil*—Mountainous, Mid-hill soil and High-hill soil (Fig.4). Mid-hill soil is suitable for growing wheat and maize. Potatoes and fruits are the principal crops of high-hill soil. Isohytal lines are drawn in physiography map (Fig.5) to show the intensity of rainfall because they have a strong bearing upon soil formation. The soil holds water reasonably well although, because of the incline, water does not remain on the surface. Depending on the altitude which determines the length of the growing season, the soil is suitable for maize (corn), wheat, barley, coarse cereals, pulses, potatoes, temperate fruits. The potential quality of soil is largely dependent on the angle of incline. If it is too sharp, rain, land-slides and avalanches take a constant toll of the top soil.

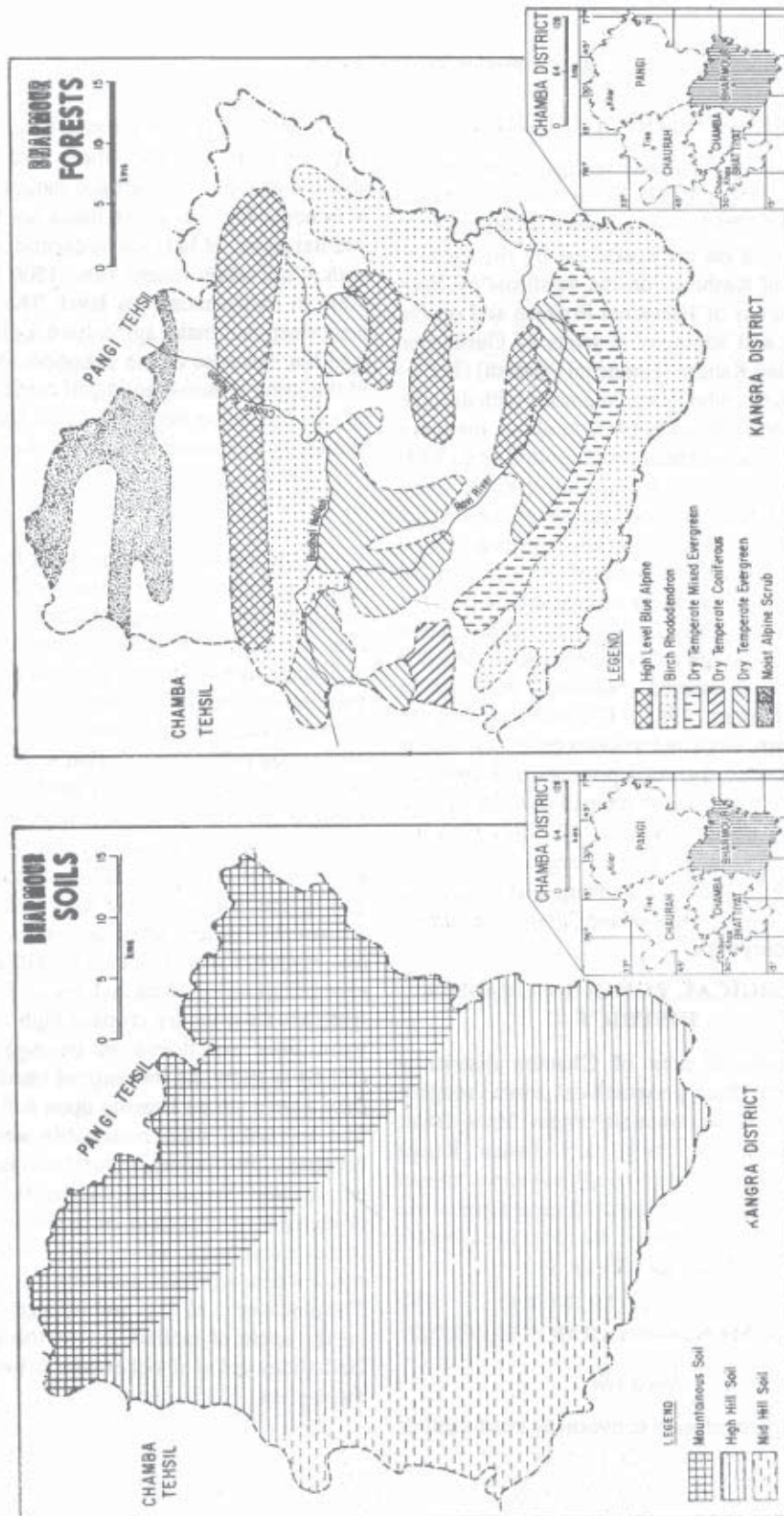


FIG. 4

Table 1: Geoecology and Human Adaptation in Chamba District

<i>Geographic zone Habitable Altitude and Climate</i>	<i>Tehsil/ Sub-Tehsil</i>	<i>Human Adaptation</i>	<i>Crops grown</i>	<i>Density per sq. km.</i>
INNER HIMALAYAN ZONE 2000-3500 metres Temperate, Severe Winter	Pangi	Dry Agriculture Transhumance Sheep and goat herding	Pulses, Coarse cereals, Barley, Wheat, Maize Potatoes	7
MID HIMALAYAN ZONE 1000-3000 metres Temperate, Cold to Severe Winter	Bharmour, Western part of Churah	Dry Agriculture, Transhumance, sheep and goat herding by Gaddis, Buffalo herding by Gujjars, Horticulture	Maize, Wheat, Barley, Pulses, Coarse cereals	16
OUTER HIMALAYAN ZONE 600 to 2300 metres Temperate, Warm to cold	Chamba, Southern Churah, Bhattiyat	Wet and Dry Agriculture, Sedentary farming, Livestock	Wet rice, Maize, Wheat	118

Climate

Depending upon the altitude climate varies a good deal. Taken as a whole, the climate is temperate with well marked seasons. Winter lasts from December to February (both inclusive) and is characterised by snowfall, which is generally heavy and descends lower in the inner-valleys. Higher still, semi-arctic conditions prevail along the main ranges and from November to March the passes are blocked with snow. Monsoon showers usually in June and continue till the middle or end of September. October and November are comparatively dry and cold (Fig.5).

Rainfall in Bharmour Tehsil by Rain Guage station Bharmour (cm)

<i>Rain Guage Station</i>	<i>Year 1978</i>	<i>Year 1979</i>	<i>Year 1980</i>
Bharmour	113.6	59.3	26.7

No temperature statistics for the valley are available.

Water Supply

The stream and rivers of Bharmour Tehsil are mainly snowfed and receive large quantities of water from melting of high level snow during the hot weather. Perennial springs are also common. The water supply in the area is ample

but in localities which have been denuded of their forest covering, it becomes difficult to obtain an adequate supply of water, especially during the hot weather. As the gorges are deep, no economic channels have been taken out. Agriculture lands are mostly rainfed, but there is enough water to irrigate fields where the gradient is moderate enough to allow it.

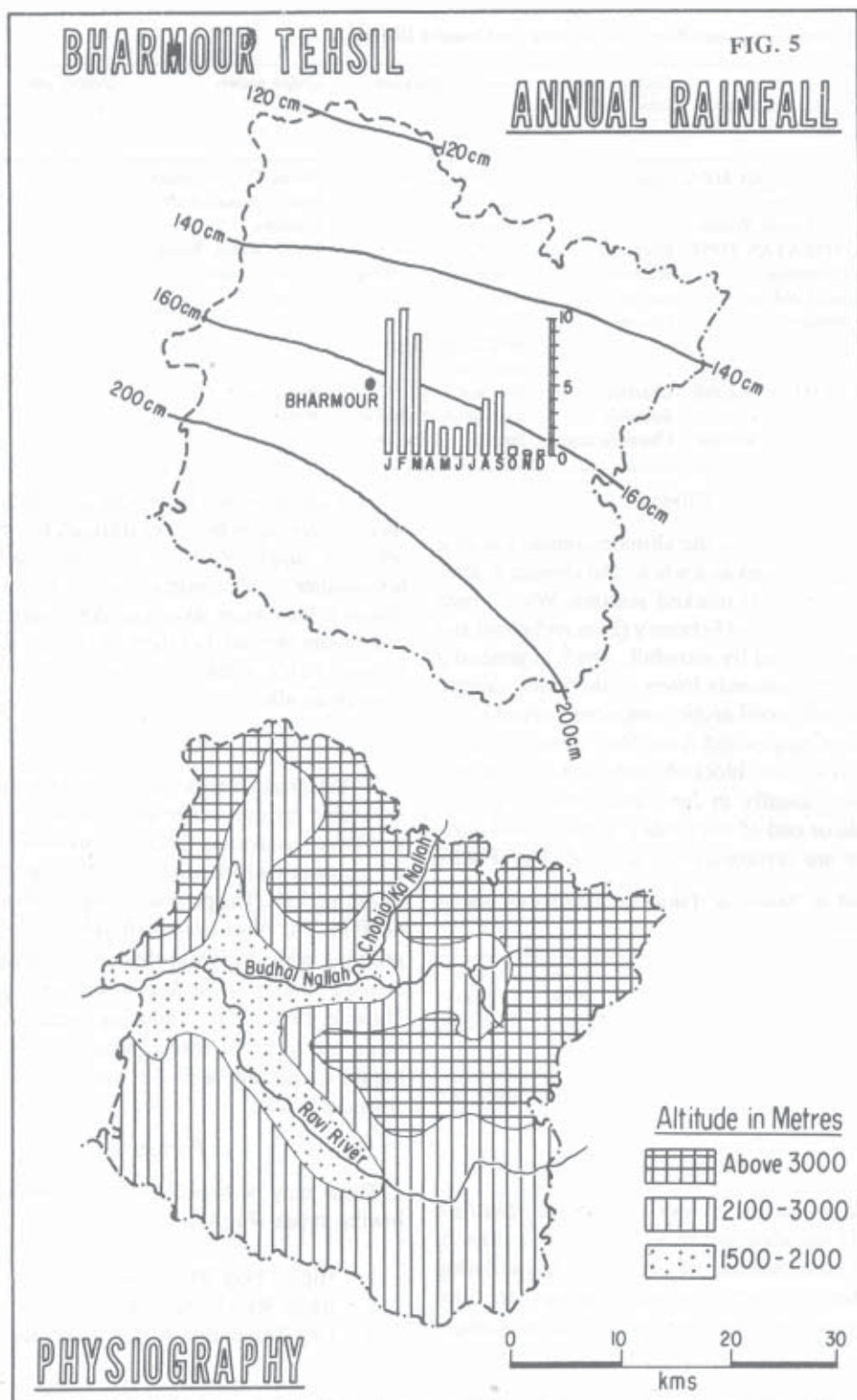
Vegetation

As the terrain is rocky and the area is subjected to heavy erosion, vegetation is usually grass, scrub brush, oaks and pines. The tree-lines higher on the slopes which are exposed to sun-light for longer periods. The permanent snow line is above 4000 m. The *bhy* or *birch* (*Betula sps.*) is found growing with the white rhododendrons and the stunted *Dhoop* (*Rhododendron anthopogon*). Outside the *deodar* producing area, there is a large extent of fir forest, sometimes mixed at higher elevations, with the *Karo-oak* (*Quercus sesscarpifolia*).

Forests

These may be broadly classified into the following types (Fig.4).

1. High Level Blue Pine
2. Birch Rhododendron
3. Dry Temperate Mixed Evergreen



4. Dry Temperate Coniferous
5. Dry Temperate Evergreen
6. Moist Alpine Scrub

Land Utilization

For the four years (1977-81) has been shown in Table 2.

Much of the land classified as pastures should be treated waste land either because it is too steep or inaccessible or because it consists of outcropping of rocks. Out of the total geographical area, forest is 13.1 per cent, land under pasture and other grazing land is 83.2 per cent which supports a large live stock population of Bharmour (Cattle = 18,270; Buffaloes = 80; Sheep = 58,840; Goats = 41,407; Horses = 145; Mules = 38; Donkeys = 30; Poultry = 731; Total = 1,19,549) from Statistical Abstract of Chamba District (1981).

Net area sown is only 3.12 per cent. Several crops are grown on this meagre land: wheat maize, barley, other coarse cereals, pulses, potato, other food crops, oil seeds and other non-food crops. The other coarse cereals include *Kodra or Ragi (Eleusine coracana)*, *Chanai (Cicer anentum Linn.)*, *Chaula (Casearia elliptica wild)*, *Seul (Xylasoma longifolium clas.)*, *Koni (Baeobotrys indica Roxb.)*, *Bajarbhang (Ocimum ocimodes Linn.)*, (Fig.6). Area under principal crops is shown in Table 3.

According to Census, 1981, Bharmour Tehsil with an area of 1813.3 sq.km is rural having a population of 29,944 of which 16,012 are males and 13,932 are females. The females constitute 46.5 per cent of the total population and there are 870 females per thousand males. There are 6,737 literate (5,479 males and 1,258 females) and literacy percentage is 22.50. There are 342 literate males per thousand males and 90 females per thousand females. The density of population per sq. km. is 16. It has 252 census village of which 104 are inhabited. The average population per inhabited village comes to 288 (District Hand Book Chamba District, 1981).

FAMILY AS A BASIC SOCIAL GROUP

Nuclear, patrilocal, patrilineal and partiarchal

family is the basic social group among Gaddis and is responsible for the total economic welfare. It is a unit of participation in all public, social and religious projects. The geographical mobility, nurtured by the transhumance, reinforces the prominence of the family. Further social ties are developed through the institutions of *Al*, (sub-caste) *Gotra* (clan), Caste and *Dharam-Bai* (pledged brotherhood) bond. This expansion of the circle of kinsmen and fictive kinsmen, may be seen as an effective adaptive mechanism to the harsh and rugged environment. In this remote and isolated area where danger and hostility of nature prevails, safety is sought in alliance through kinship or formalized bonds. The production strategies of the household are oriented towards meeting the subsistence needs of the family-the ideal state is one in which a family can support itself entirely from its own harvest and have little surplus to fulfil its other economic obligations like payments to artisans and *Purohit* (priest). This ideal is not attained by every family. The goal of the security and survival of the family is most paramount. The subsistence staple crops are most valued. Once the needs of the household are fulfilled the remainder if any, are allocated for exchange, either barter or cash transaction.

To fulfil the basic needs, a family has to extract as much out of the land as possible. A family has diverse needs. All these needs must be met out of the yield of the land. The danger of abnormal climatic conditions is always present. Maximum insurance must be provided for against crop failure. The families therefore grow different crops in different fields. They have very small holdings and cannot hope to bring under plough more area than they already have. They must therefore eke out their existence from what little is available.

The tools employed are few and simple. Human technological intervention to either control or improve the environment is minimal, consisting of planting, cultivation and harvesting. In such conditions, man does not secure himself against calamities like floods, draught or crop failure. At this level of pre-industrial agriculture,

Table 2: Land Utilization (in Hectares)

S.No.	Particular	Year			
		1977-78	1978-79	1979-80	1980-81
1.	Total geographical area by village papers	1,81,832	1,81,833	1,81,833	1,81,833
2.	Land not available for cultivation				
	(a) Barren and unculturable land	282	280	280	117
	(b) Land put to non-agricultural use	1,281	1,280	1,280	1,448
3.	Forests	20,476	23,814	23,812	23,810
4.	Other uncultivated land excluding current fallows				
	(a) Culturable waste	467	446	450	500
	(b) Permanent pasture and other grazing land	1,54,723	1,51,368	1,51,348	1,51,247
	(c) Land under miscellaneous tree crops and groves not included in area sown	1	10	11	23
5.	Fallow land:				
	(a) Current fallow	462	484	718	732
	(b) Other fallows	35	46	59	108
6.	Net area sown	4,106	4,106	3,878	3,848
7.	Area sown more than once	1,323	1,482	1,561	1,861
8.	Total cropped area	5,429	5,587	5,439	5,709

Source: District Land Records Office, Chamba, 1981.

Area under irrigation is 5 hectares only, 2 hectares under wheat and 3 under maize.

Gaddis have attempted to intervene with nature to secure more reliable productivity. This they have achieved through alteration of the 'given' features of the environment and production strategy oriented towards risk management.

Levelling and Terracing of Fields

The mountainous terrain is altered through the levelling and terracing of land, and related operations. Terracing makes plough agriculture possible in this terrain by providing relatively level fields and minimizing erosion and it enhances productivity by conserving heat and moisture.

Multitude of Crops

The Gaddis cultivate a wide variety of crops, taking advantage of various soil types at different altitudes. This also provides an insurance against devastation from crop specific diseases and pests. Hardy, drought resistant and quick

maturing crops are grown. Staples like maize, wheat and barley are grown along with coarse cereals (buckwheat, dry rice) and pulses.

Cropping Pattern

Dry terrace cultivation, carried out on steep hill slopes, produces two crops each year. The *Kharif* (Summer) crops are sown from April to June and harvested from August to October. The *Rabi* (Winter) crops are sown in October and November and harvested in May and June. The main *Kharif* crop is maize and other coarse cereals grown throughout the district. Other *Kharif* crops are pulses, potatoes, tobacco, beans, *Gandholi* (Pumpkin) and cucumber. The main *Rabi* crops are wheat, barley and oil seed. Where the soil is too bad to grow these crops, coarse cereals like *Phullen* and *Bhares* are grown instead.

The sowing period of maize crop is from the end of April to the beginning of May. The harvesting period is middle of October. After maize

Table 3: Area Under Principal Crops (Hectares)

S.No.	Name of Crop	1977-78	1978-79	1979-80
A. FOOD CROPS				
I. 1. Cereals				
	Wheat	1,418	1,448	1,259
	Maize	1,165	1,250	1,341
	Barley	747	776	834
	Total Finner Cereals	3,330	3,474	4,434
	2. Coarse Cereals	1,431	1,327	1,231
	Ragi, Chanai, Seul, Phullen, Bhares, Chaulla, Koni, Bajarbhang			
	Total Cereals	4,761	4,801	4,665
II.	Pulses (Mash, Mungi, Rong, Masur, Quilth)	554	656	632
III.	Potato	32	50	45
	Other Food Crops	25	34	70
B. NON-FOOD CROPS				
IV.	Oil seed (Rape and Mustard)	48	37	20
	Tobacco	14	10	8
	Total Food Crops	5,372	5,540	5,412
	Total Non-Food Crops	57	47	27
	Total All Crops	5,429	5,587	5,439

has been harvested wheat or barley is sown in the same fields. Corresponding to the harvesting of maize, the sowing of wheat or barley is begun in the uppermost fields and then gradually advanced downwards to the lower fields. The sowing period of wheat or barley is from October-November and harvesting period of wheat is June-July and barley is May-June. After wheat or barley has been harvested, coarse cereals are sown in the same fields. Sowing of coarse cereals is in June, the beginning of summer monsoon. The crop is harvested during the three months from October to December by cutting the ears with sickles. Harvesting begins in the uppermost fields and gradually advances downwards. The domestic animals are pastured in the harvested fields. Then this fields is left

fallow for six months till the next sowing. Pulses are sown along with maize and harvested along with it. Each family has separate fields for summer and winter crops. In order to facilitate crop rotation, all the villagers agree to plant only one sort of crop in the upper fields and another in the lower fields. Fallowing some parts of cultivated lands keeping domestic animals in the fallowing fields, grazing them on the harvested fields are traditional practices to maintain soil fertility.

The important crop rotations followed in Bharmour Tehsil are:

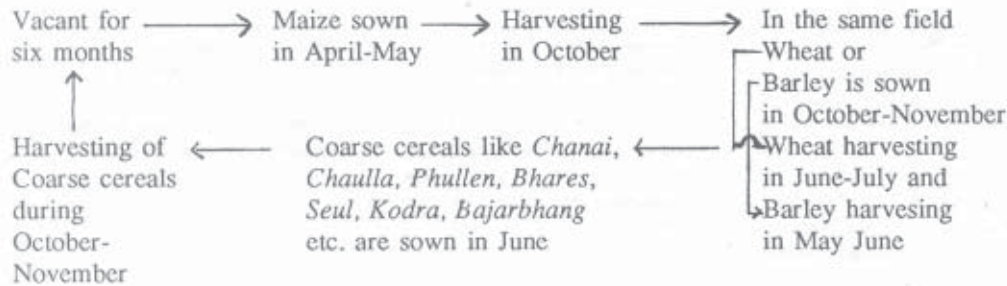
- (i) Maize followed by wheat or barley,
- (ii) Chanai followed by wheat
- (iii) Barley followed by Mash (Pulses)
- (iv) Wheat followed by Chanai or Phullen or Bhares or Seul and
- (v) Maize followed by Masur (Pulses)

Crop Mixture

To make maximum use of land different crops are grown in one piece of land. The important crop-mixture grown in Bharmour are as follows:

- (1) Maize and Mash, Maize and Rong and Gandholi (vegetables) Chanai and Mash, wheat and Masur and Mash and Seul.
- (2) Maize and Seul, French beans, Rong, Chaulla and Maize, Phullen and Bhares and Wheat and Mash.
- (3) Mash and Rong, Chanai and Mash, Maize and Rong.
(Mash, Masur and Rong are pulses).

The great number of crops, mixed sowing, placement of fields far apart, all are attempts to reduce risk. But even then in Bharmour, agriculture is insufficient by itself as a subsistence base. They compensate for the agriculture deficit by utilizing grazing grounds in the area for rearing sheep and goats. However, these pastures are only seasonal; Gaddis cannot rely on them for year-round sustenance. Consequently, a pattern of transhumance is developed to utilize the pro-



ductive area of mountain-side in productive season, while relying on the other areas the rest of the year. In summer they migrate to upper reaches in Bharmour and in winter to in and around Kangra hills.

The effective adjustments of the agricultural subsistence to the environment can be achieved only by careful management of the resources. The constraints of a rigorous agriculture time table tend to restrict movement and other activities. This may be competitive with pastoral pursuits. But Gaddis practice both agriculture and pastoralism. From the calendar of economic activities (Table 4) it can be seen, that they have adjusted their economic activities accordingly.

Transhumant Pattern

The Gaddis keep constantly migrating between the low hills and the upper ranges along with their flocks. The *Malundi* (Owner) is a shepherd who tends his own flocks. But if someone is hired to look after the flock on wages, he is called *Puhal*. In summer, *Puhals* are hired by a few people when they cannot spare someone from the family to look after the flock, as all hands are needed at cultivation. Sometimes, three or four families pool their animals under the care of one *Malundi*. The families do not accompany on summer migration. The *Malundi* takes the flocks to pastures. If the pasture is nearby, he returns to the village every night; if far off he stays there.

In the winter (October and November), the flocks are driven to lower hills of in and around Kangra. For winter migration *Puhals* are not hired. This work is done by one of the family members. In March-April, these flocks are driven

back to Bharmour villages where these are utilised to manure the fallow land. The flocks are kept near the village for 20-25 days. Then, the flocks move up to upper ranges or *Dhars* (Grazing land) under the care of *Puhal* or *Malundi*. There they remain for two months. Each shepherd has his own fixed *Dhar*, where a fixed number of sheep and goat can graze for which he has paid tax.

Shearing of sheep takes place thrice a year during March, June-July and September-October.

Optimization of People to Resources

Every household is a production unit. Agricultural and pastoral activities dominate the economic scene. All households try to optimize the ratio of people to resources. Every male and female, adult and child, if he is physically fit enough to work, participated in the economic activities. Working force forms substantially greater proportion of population in Bharmour *Tehsil* because of high percentage of women's participation in the economic activities is 77 to every 100 working male. Agricultural activities are shared by both male and female, except ploughing which is done by men only. Pastoral activities are of male domain, while household chores fall to women. These duties are not fixed definitely within the family.

As the field of economic activities is so vast, it is essential to maximize the adult labour force in order to cultivate all the widely scattered field, as well as, attending to pastoral duties. The labour force can be maximized in these patrilocal families by marriage, birth, adoption and incorporation. When a wife is barren, polygyny is a

Table 4: Calendar of Economic Activities

<i>January (Posh-Magh)* (15 December-15 January)</i>	<i>February (Magh-Phagun) (14 January-16 February)</i>	<i>March (Phagun-Chet) (17 February-12 March)</i>
Snow in Bharmour, Gaddis are in lower hills with flocks and families. Sell wool and wollen products, employed as labourers, women and children work as domestic help in the homes of Kangra people.	Split up families gather at one place, buying of things like utensils, shoes, umbrella, winnowing fans, baskets etc. for home.	People start returning to their permanent homes in Bharmour.
<i>April (Chet-Baisakh) (13 March-12 April)</i>	<i>May (Baisakh-Jeth) (13 April-13 May)</i>	<i>June (Jeth-Asarh) (14 May-13 June)</i>
Gaddis return homes; Mutual aid groups are formed for performing communal tasks such as repairing water mills, clearing of village paths or repairing water channel. New cross-beams for damaged houses are brought. Work teams are formed for repair of retaining walls of fields broken down by snow. Apart from communal tasks, ploughing of individual fields and clad breaking is done.	A second ploughing on the fields and the fields are levelled. Sowing of maize seed by broadcast method after the showers which take place at this time. Third ploughing and seed is allowed to germinate. <i>Chanai</i> is sown in the fields or plots just after the wheat or barley are harvested or in the plots left fallow for sowing maize; a little tobacco is grown. Harvesting of wheat.	<i>Chaula, Mash, Kodra or Ragi, Bajarbhang, Koni Seul</i> and Pulses are sown in the last week of May in the fields after the wheat or barley has been harvested. <i>Phullen, Bhares and Ragi</i> are sown in the fields from which wheat and barley is harvested. Hoeing of maize, Transplantation of tobacco, ploughing and manuring. Some vegetables are also grown in the plots of land adjacent to their house for personnel use. Large herds of sheep and goats arrive from lower altitude, stay round the fields for fortnight and then proceed to upland pastures. Only male members accompany sheep herds during this migration. When men folk are around for fortnight, they help in agricultural activities. Major portion of agricultural activities are done by women who do weeding, hoeing, harvesting and thrashing except ploughing which is attended to by men.
<i>July (Asarh-Sawan) (14 June-14 July)</i>	<i>August (Sawan-Bhadon) (15 July-15 August)</i>	<i>September (Bhadon-Asoj) (16 August-15 September)</i>
Wheat is thrashed and dried in Sun.	Weeding of maize. Harvesting of <i>Chanai</i> in the middle of August if sown in the fallow fields. First, ears of the crop are removed and then the stalk is cut.	Harvesting of maize, cobs are removed from the stalks, cobs are shucked and dried. Stalks are stored for fodder and root are dug by hand before the ploughing. Few people go to upper ranges to collect <i>Dhoop</i> and medicinal plants, Harvesting of <i>Chanai</i> , sown in the fields which previously bore wheat and barley. Harvesting of other pulses <i>Mash</i> and <i>Rong</i> .

<i>October(Asoj-Kartik)</i> (16 September-15 October)	<i>November(Kartik-Maghar)</i> (16 October-14 November)	<i>December(Maghar-Posh)</i> (15 November-14 December)
Fields are manured, ploughed and prepared for wheat or barley. The best maize corn is set aside for seed and the rest is husked. The kernels are dried in the Sun to prevent germination. Harvesting of <i>Ragi</i> or <i>Kodra</i> , <i>Phullen</i> , <i>Bhaves</i> , <i>Seul</i> , <i>Chualla</i> , <i>Bajarbhang</i> , <i>Koni</i> and tobacco. Selling of <i>Dhoop</i> and medicinal plants to shop-keepers. On their return grass is collected for winter fodder (for the live-stock which remains in Bharmour) and firewood is stored for heating and cooking during winter (for the family members who remain in the village to look after the animals and house).	With the advent of winter, people start migrating to lower hills, where grazing lands are available for sheep and goats, facilities for selling wool and wollen products which have been spun during the spare time are available, labour work for male members and for women and children domestic work is available. Before departing sowing of barley and wheat is done.	Winter continues. Gaddis have migrated to lower hills, only and few staying behind to look after the remaining live stock. Much of their time is spent in spinning and weaving. Some make grass shoes. Gaddis in Kangra, besides grazing sheep and goats, sell their wool and wollen products, others employ themselves as labourers or do odd jobs, women and children are employed as domestic help.

* Hindu (Vikrami Calender).

means to seek a heir, when a woman is widowed, polygyny (through mechanism of levirate *i.e.*, fraternal widow inheritance) is a means to provide her husband within the family, retaining her labour. Incorporation of young male relations, *Ghar-jawantari** (a typical form of marriage) and ties of *Dharam-Bhai* (pledged brotherhood) are the means to supplement labour force of the family.

Social Interdependence

The Gaddis are mostly owner cultivators of small holdings and agriculture is a way of life rather than a commercial proposition. Earnings from agriculture are generally low and it is not economically feasible to hire labour for assistance in the agricultural operations. The nuclear family unit of husband, wife, and children is the effective unit of day-to-day life in the village, owning its own property and managing its own economic affairs. However, there are certain facets of economic life, where help of other

people is needed. As the society is not affluent enough to purchase labour, the wider social organization of village incorporates families, in various ways, into relationships with their fellow villagers. Informal ties of friendship and neighbourliness is the basis of social organization. Besides, every family is also involved, in an enduring mutual-aid-group (*Barton*), the core of which consists of all other families of the village. All families in the *Barton* group are obligated towards each other. They contribute labour to one another at times of house building, repairing, marriages and funeral. Contribution of gifts and labour are investments and are fully reciprocal over time. One gives because one has received and can always count on receiving in the future, in this type of traditional structure. This type of reciprocity exists between families, rather than between individuals; the obligations of the parents are inherited by children.

The specific nature of the agriculture and herding cycle is circumscribed by the ecological conditions of the area. In the months of summer after their winter migration when they return to Bharmour, their permanent village, the agriculture season starts. The concentration of the most agri-

* *Ghar-jawantari*- In this form of marriage the boy has to work as helping hand in the house of his would be father-in-law for a specified period, between 5 to 7 years.

cultural work in the months from April to October produces a period of stress and strain for the utilization of manpower. During this period every hand is needed to plant and reap the harvest. There is heavy demand of labour but all manpower is needed in their respective fields and no remuneration is sufficient to divert people from agriculture. As there are no big landlords, there is not enough cash to encourage the immigration of labour. Co-operation between families, can be seen at the time of thrashing when two or three families may help each other in turn, pooling their cattle to thrash the wheat and barley and their own labour to husk the maize. These groups are basically friendship groups. Most of the families of small hamlet are kins, but within the hamlet friendship and co-operation are governed by compatibility and not by closeness of kin ties.

For certain other necessities, like making of iron implements, ploughs, jewellery etc., people have to depend on artisans. While full-time specialists are not there, but those who are considered as such are paid in kind or cash depending on the relationship with the family. Every adult member of the village community has a significant role to play in the network of mutual dependence and help. The village blacksmith, village carpenter, the housewife, the *Purohit* (Priest), the *Chela* (medicine man) all of them are indispensable for the efficient functioning of the economic and social life of the village.

Severe limitation on the land available for cultivation, combined with low margin of productivity and a lack of market for exporting local products, have prevented the emergence of either full-time specialists or landless labourers. Lacking hired labour, co-operation between families and *Barton* (obligatory assistance) obligations have become the compensating factors through which households socially communicate and a stable labour supply is ensured.

DEVELOPMENT AND CHANGE

After independence (15.8.1947) several community development programmes for development purposes were initiated. Apart from

developing the human and material resources these programmes also were meant for balanced growth by exploiting the local potentialities. It is a planned change brought about by the efforts of government agencies and other voluntary institutions. These community development schemes are initiated with the background knowledge provided by National Extension Service which was launched in the country on 2.10.1952.

In Bharmour National Extension Service Block was established on 2nd October, 1956. Besides the usual budget of National Extension Service, funds are also provided for tribal welfare work. In addition to this two Integrated Tribal Development Projects viz., Bharmour and Pangi are functioning. These development programmes cover all the aspects of social life of villagers in order to bring about an overall improvement in life. The development programmes at the village level cover several fields. Agricultural extension projects are undertaken to popularize improved seeds, chemical fertilizers, green manuring, new and improved methods of cultivation, new and improved implements, tools and insecticides. Similarly, the animal husbandry programmes covers castration of calves of inferior breed, provision of stud bulls, provision of artificial insemination centres, prevention of cattle disease and arrangements for the treatment of sick cattle. Development of cottage industries, arts and crafts also forms a part of the community development. This programme also caters to the idea of super-imposition of new institutions like *Panchayat* (Administrative unit) elections; revenue, forest and police administration, co-operative societies, laws affecting social life and behaviour; educational and health institutions in the traditional setting.

Opportunities for Development within the Existing System

Efficiency of the existing agriculture system can be increased in several ways. As the slopes are so steep that either good soils is washed away with rains or with the melting of heavy snow, conservation work needs urgent attention. As

mechanized farming is not possible, suitable agricultural implements for small terrace should be devised.

As the area is semi-dry, the peasant can neither depend on rain nor on irrigation as the gorges are very deep and no economic channels have been taken out. Sprinkle irrigation with lift is the only solution for this area which was suggested in 1979 by the Public Works Department.

Although the use of manures and chemical fertilizers is very essential for quick result, in the agriculture production, the use of chemical fertilizers in Bharmour is very limited due to

- (1) non-availability of these fertilizers in sufficient quantities;
- (2) lack of irrigation facilities;
- (3) high cost of transportation; and
- (4) ignorance of the people.

The few people who can afford chemical fertilizers only apply fertilizers to wheat as the crop goes under snow soon after sowing and application of fertilizers, thereby making up for the deficiency of irrigation. Gaddis have their own system of manuring the crops. But a great deal of the indigenous manure is lost, as the manure for the summer crops is laid on the ground just before the snow falls and the manure for the autumn crops is laid on the ground without the addition of any dried vegetable matter so that it cannot form compost. Although there is a large livestock wealth and plenty of organic material (from shrubs, leaves, grass) in Bharmour which when mixed and preserved in pits for a specified period can serve as an effective substitutes for nitrogenous fertilizers, yet no substitutes are prepared. In Bharmour, there is a practice of grazing the livestock in the open and therefore most of the dung and urine which can possibly be used as manure is wasted. Whatever manure is available during the nights, is preserved on the surface and therefore has poorer nitrogenous contents as compared to the farm-yard manure preserved in pit heaps. The know-how for preparation of organic manure has not been demon-

strated by the Bock Authorities and as a result it has remained unutilised.

Barley and other coarse cereals are major crops of the area, but so far no high yielding varieties of these have been introduced in the area. There are no seed multiplication farms in the area, with the result that old type of seeds have to be brought involving high cartage expenses. Five or six seed multiplication farms at different places may help the villagers.

The other secondary occupation of people is sheep and goat rearing. The local variety of sheep is poor. The quality and yield of wool is poor. But, not much has been done in this direction to improve the breed of sheep. The staple of the wool is short, hence it cannot be spun on spindle to give a good and smooth structure. The woollen cloth produced is coarse and does not fetch much. Improvement in the quality of sheep is needed.

The agroclimatic conditions of the area are conducive for the production of cash crops like seed potato, vegetables and vegetable seeds. But the lack of infra-structure arrests its development.

The climate is suitable for horticulture development. Fruits like apple, stone fruits, nuts and other dry fruits can be grown in the area. Besides, improving the economic condition of the people, it will also help arrest soil erosion. In the absence of roads, manually operated aerial ropeways can speed up the carriage of fruit boxes or small factory for making Jam or Jelly of ripe apples should be started.

In terms of overall subsistence economy wage labour opportunities should be increased. Some people migrate in winter to lower hills to earn money by doing all sorts of odd jobs. It can be avoided by creating job opportunities within the area.

Bottleneck Experiences in Implementation of Development Programmes

Most development programmes in Bharmour aim at providing Gaddis with a stable homestead and income. In Bharmour, however, due to land and labour limitations, the programmes has not

made much headway. Both land and labour are required for significant surplus. Amassing land is pointless if sufficient labour is not available to make it productive either for agriculture or grazing. Horticulture does present an option now but it has yet not brought about any significant change in the land holding pattern.

Although development programmes have been working in the area for the last 25 years, Bharmour *Tehsil*, still is the most backward area. The problems of the area for development are quite different.

1. Lack of transportation and communication is the major problem of the area which hampers the development of the area. The nature of terrain has prevented the development of markets because transportation of goods was inhibited. With family self sufficiency there generally was little or no need to buy local products. When a family harvests a good crop, other families do so too. There has generally been little export market. The economy is sufficiently marginal and there is not much room for risk taking.
2. The main occupation of people is agriculture. The agricultural development is arrested by (i) steep slopes which restrict extensive agriculture, (ii) menacing problem of soil erosion; and (iii) limited scope of irrigation which prevent more intensive use of chemical fertilizers.
3. Though climatically the area is suitable for horticulture development, the cultivable land is already scarce and shift to horticulture would result in acute food shortage. The long gestation period between planting and bearing of fruits, absence of roads for export market hampers the horticulture development. Horticulture required permanent investment and year-round attention by the growers, migratory nature of the Gaddis precludes this.
4. The secondary occupation of Gaddis is sheep and goat rearing. The extensive graz-

ing on land, which begins in spring and continues until autumn, coincides with 'spring-autumn' growth cycle of temperate vegetation. The intense grazing activity is seriously affecting the vegetation cover and its chief repercussions are: increasing danger of extinction and severe gene-erosion of some plants, since the plants are grazed during the peak period of reproductive cycle. The number of sheep and goat is restricted by government orders to check soil erosion. Moreover, there is a problem of feed and fodder which prohibits the development of livestock.

The degree of individual autonomy and family self-sufficiency is a mixed blessing for future economic development. While it means less commitment to tradition, it inhibits co-operative effort and activity. In Bharmour, community development has so far benefitted only a few villages around the Block Headquarters and that too not significantly. Although there is no caste conflict as in other parts of India, the reason for the failure are different. The whole programme is inappropriate to be applied in these mountain areas and is ineptly presented to the people. Then there is deficiency in selection, training and motivation of the personnel invested with responsibility of introducing the programme into the area. Although the programme has been running in this area for the last twenty-five years, its success has touched only fringe of the people. However, inspection of records filed by village level workers to higher authorities would lead one to think it was a total success. But in practice its effectiveness has been greatly limited by lack of personnel, lack of funds, inadequate roads, corruption and lack of interest on the part of both the officials and people. Some short-sighted programmes have however retarded the progress, for example the Government decision to allot five *bighas* (Acre) of land to every landless family. Since cultivable land is scarce, land on the hill-sides was allotted to the landless, resulting in severe land erosion.

The horticulture department encouraged the Gaddis to grow apples and many took to orchard farming. The results were good and encouraging. But in 1976, the road was blocked by heavy snowfall, and there were no other means to send apples to markets and no other way to utilise these fruits. People lost heavily and were afraid to try any other innovation.

The *Khadi Gram Udyog* Commission (Government's Cottage Industry) tried to keep the Gaddis from migrating in winter to the lower hills. The Commission centres in Bharmour engaged them in making woollen shawls. The experiment did well for sometime, but one winter all the roads were blocked and the raw materials from Amritsar could not reach Bharmour. The Commission does not use the local short staple material which is considered to be of an inferior variety. The Gaddis who had stayed back found themselves without any means of livelihood. Little wonder, they reverted to their traditional migration the following year.

Bharmour being a *Tehsil* headquarter and having a large official complex, offers the people of *Patwar* Circle greater opportunities to earn money in non-traditional ways. However, these villages are still threads of the relatively unstratified economic fabric. In course of time, diversification of the economy and increased income resource may lead to a more marked economic differentiation from one family to another. Until these new trends are clearly established, it is difficult to predict their precise influence.

The music of the Shepherd's flute is now mingled with the blare of newly-arrived transistors. Traditions blending with modernity in the changing environment has made the Gaddis a curious mixture of old and new. They are a people for whom agriculture, pastoralism and the economic and social values of livestock are all important.

They have not so far been much affected by the impact of outside world. They inhabit a country whose environmental limitations restrict the usefulness of western ideas and techniques and the possibilities of change.

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