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House types and structures in Chitral District

Israr-ud-Din
Dept. of Geography, Peshawar University

ABSTRACT

This paper records the distribution of house types in the Chitral Valley. It then analyses the relationship between the house types and such factors as tribal distribution, the physical environment, availability of building materials, the hazards faced by the different groups and the varying cultures they have developed.

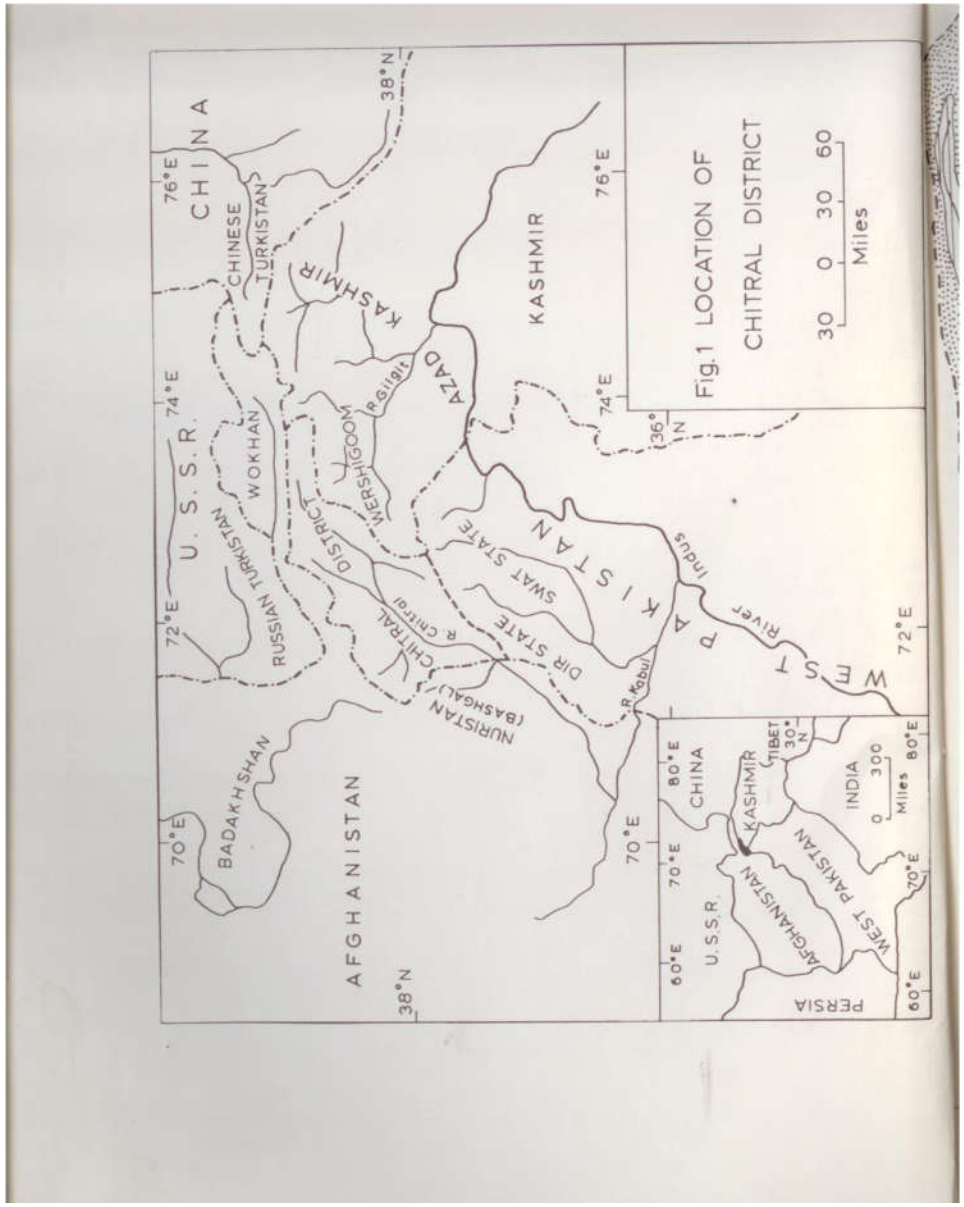
INTRODUCTION; THE REGION

Chitral district is situated in the northern-most zone of Pakistan between longtitudes 71°51E and 74°E, and latitudes 35°N and 39°N. It is surrounded by Afghanistan on the north and west, the Northern Area of Pakistan on the east, Swat and Dir districts of Pakistan on the south; see Fig. 1. It covers an area of 5,727 square miles.

Physiography

The region is extremely rugged and mountainous with deep, narrow and tortuous valleys through which run the river Chitral and its many tributaries; see Fig. 2. It is enclosed by the vast system of the Hindu Kush and Karakoram and their various offshoots which are 15,000 to 25,000 feet high. Here are more than 40 peaks over 20,000 feet high which finally culminate into one towering mass forming Tirich Mir (25,263 feet). The region is separated from the rest of the country by the Hindu Raj range, a branch of the Karakoram traversing NE to SW, the only contact being through passes over 10,000 feet. The area is drained by the River Chitral and its many tributaries, and human settlements and the establishment of villages is possible only along the rivers, on terraces, alluvial fans or on abandoned river courses. The river rises in the Baroghil area from the Chiantar glacier and flows for about 220 miles through the area and enters Afghanistan at a village called Arandu which is the lowest point in th region with an elevation of 3,577 feet above sea level. On its way the river collects many other rivers and streams

Editors Note: To convert distances to the metric system, note that 1 mile = 1760 yds = 5280 ft = 1.609 km.



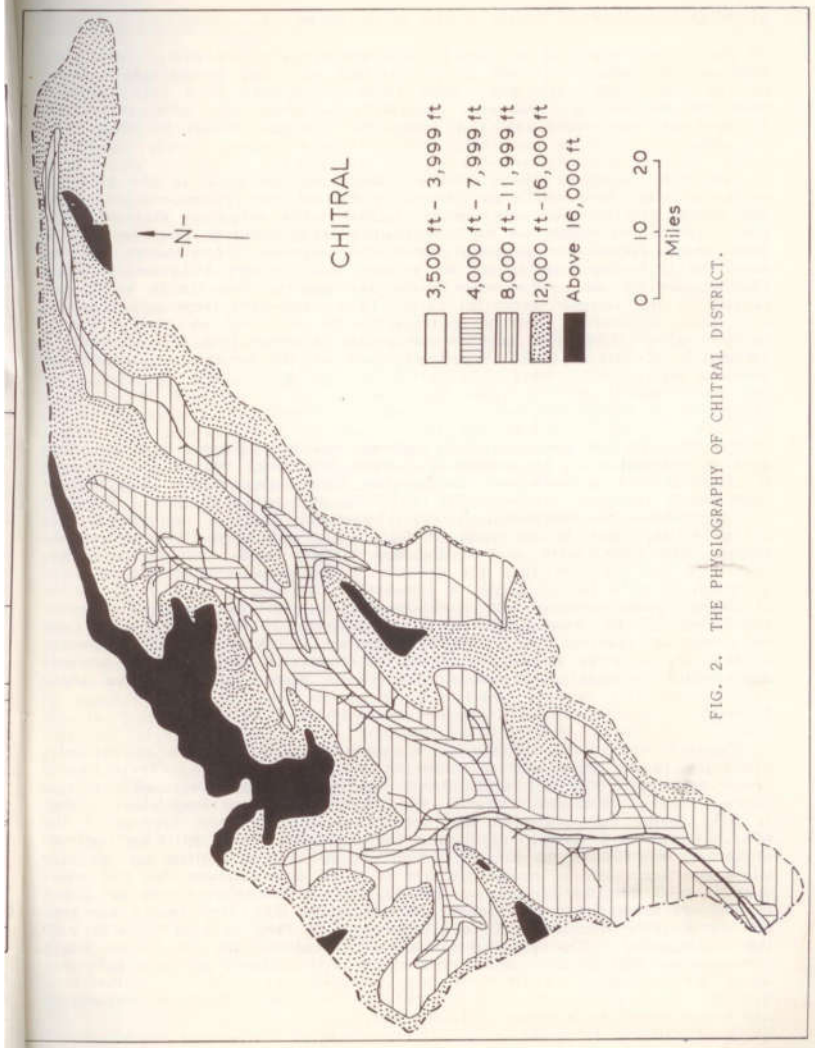


FIG. 2. THE PHYSIOGRAPHY OF CHITRAL DISTRICT.

which are an important source of life in the area.

The Chitral River valley has an average width of 3/4 mile. Sometimes, however, it opens to about 3 or 4 miles wide as in Baroghil, Buni, Chitral Town and Drosh, and at other times it narrows to a defile of less than 200 yards, e.g., Darband, Mashalik, Karbitari etc. The side river valleys are even narrower and there the average cannot be more than 1/4 mile.

The most important characteristic feature of the area is the presence of the alluvial fans which are found throughout the region and on which are almost all the settlements and villages. The origin of these alluvial fans can be attributed to the temperature and humidity extremes of the area which create the principal weathering agents. Avalanches rushing down the hill slopes in spring or winter, hill torrents and streams which rise abnormally when the snow melts in summer, and floods which are caused by the summer torrential rains, have since time immemorial brought with them millions of tons of material to be deposited at various places in the valley floor and some to be partly drained into the rivers. A succession of alluvial fans have developed at the mouths of streams all over the district.

Climate

The Chitral District experiences extreme and dry climates and the whole area is continental. In summer it ranges from very hot in the lowlands to warm in the uplands and cool in the higher elevations. The highest temperature recorded in Drosh is 110°F for the month of July. Even in the highlands the temperature rises appreciably high. In winter most of the valleys are in the path of cold winds and blizzards which sweep through from the north and it becomes bitterly cold, though it is less severe in the lowlands than the uplands. The lowest temperature recorded at Drosh is 10°F in the month of January. The area gets 10 to 40 inches of rainfall from the southwest to the northeast. This is why all the forests are found in the southern parts of the district. The rains mainly come in winter and spring, e.g., between December and April and which amount to 67% of the total annual rainfall. These rains often come in torrents and result in widespread floods that cause great damage to the area.

Forests

Forests, which are mostly determined by the distribution of rainfall, are found in the south and southwestern parts of the region. These forests occur between 3,000 feet and 10,000 feet above sea level and comprise deodar (Cedrus deodora), Spruce, Fir and Chir (Pinus longifolia). Oak is also found but scattered and mainly on the southern aspects of the hills. Birch and Juniper are found in abundance. The hills in the rest of Chitral are almost barren. However, in the valley bottoms occasionally one comes across thick wooded patches of birch and willowbrakes and small aromatic and xerophytic shrubs. Poplar, walnut and plane trees are found in most parts of the region below 8,000 feet and they are planted wherever soil is suitable and water is available and so they go side by side with the settlements. The plantations are all confined to the valley floors except where hill terraces and gentle slopes with suitable soil and sufficient water are available. Fruit trees, e.g., apples, pears, peaches, mulberries, apricots and grapes are also planted in the area. No trees whatsoever are found above the altitude of 12,000 feet.

Settlement distribution and siting

In Chitral we find settlements spreading from 3,727 feet elevation at Arandu, the lowest point in the region, to the 12,000 feet contour line at Baroghil. As mentioned earlier, most settlements are found on the alluvial fans, or on certain river terraces, wherever soil fertility coincides with easily available water. Villages are also located in the beds of abandoned river courses where similar conditions obtain. Besides the vast tracts of uninhabited areas due to adverse physical factors, there are many such habitable stretches scattered in the region which are at present not settled because of precarious conditions of water supply. Settlements are generally sited on the raised side of alluvial fans which contain mostly infertile and stony lands. Thus the fertile lands are spared for cultivation. Hill torrents and streams are also important determining factors, several being avoided because of their being prone to flooding. The banks of deeper and less dangerous streams are, on the other hand, favoured sites for settlements.

There are also certain socio-economic factors in settlement foundations and locations which result in the establishment of certain individual hamlets and dwellings amidst the cultivated lands. From place name evidence and ties of kinship, it is evident that many such settlements are due to the increase in population on older sites. Another reason is the feudal system that prevailed in the region till the 1950's. The then ruler of the area had supreme power and had full authority to seize any land and grant at will. In this way his favourites were given tracts of village land, where they settled and surrounded themselves with a number of agricultural labourers or tenants and their relatives. The inheritance system prevalent in the region also plays an important role in this respect. Because of this system the holdings of villagers are scattered in fragmented pieces of different sizes. Many who inherit land in different parts prefer to settle near their holdings.

In the Mulikhow area, fertile terraces and the gentle sloping nature of the hills have made it possible to locate settlements there. Settlement growth, however, started on the valley floor but the increase in population has impelled the settlers upward alongside the streams arising from springs. The avoidance of landslides and mudflows, which are common in the area, is another factor in this movement. In many villages this pattern also results from seasonal trans-humance, several families having houses at different levels. The Kalash tribesmen build their houses on hillsides to gain space for cultivatable areas. Defence was probably as important a factor in the past because, until about one hundred years ago, there was a constant threat of attacks on the Kalash valleys from the valleys of Kafiristan (now Nuristan in Afghanistan) by the Red Kafirs.

The Wokhi of the Baroghil area live in scattered dwellings and site their houses with a view to shelter from the cold northern winds of winter.

In Hairan Kot, the only wholly Pathan area in Chitral Town, houses are built along the slope in such a way that every one has its door almost on its neighbour's roof. One reason for this may be the prevailing traditions in the district of Dir and Swat, from which the tribe originates, where most of the houses are built in the same fashion for defence purposes.

Distribution of Population

The total population of the area is 160,000 and the density is about

30 persons per square mile; see Fig. 3. This is low because of the vas glacier- bound valleys and barren mountains, which are uninhabited The distribution of population follows the lines of streams and rivers an is concentrated on the alluvial fans where water can be easily obtaine or on the gentler slopes or hill terraces which have fertile stretches an where water is available. If we consider the density of individual village then a different picture would present itself for Chitral proper enjoy a density of about 1,000 persons per square mile and in the rest of th villages it would vary from 11 persons per square mile in Baroghil t 755 persons per square mile in Jughoor. The average density for all th villages is 433 persons per square mile.

HOUSE TYPES AND STRUCTURES

Broadly speaking, the houses in Chitral are divided into two types, e.g., houses with lantern-type ceilings and the flat roof houses; see Fig. 4. The main characteristic of the lantern-type ceiling houses is the presence of a bulge created in the centre of the roof by building up beams of the roof cross-wise to form an octagon shape. The central structure is carried by four strong wooden pillars erected in the middle of the house. An orifice or 'koomal' varying in diameter from place to place, is left open in the bulge, just above the hearth, to serve as a chimney and also for the purposes of windows and ventilator. The second group have completely flat roofs without any bulge in the middle. This type includes further sub-types, e.g., the 'Shalma' type and the 'Angeeti' type. The two are different from each other in the sense that the 'Angeeti' Khattan has no smoke hole in the middle unlike the 'Shalma' type, but has a chimney placed on one of the walls, mostly on the back wall. The fireplace in 'Angeeti' type houses is also made in the wall, not in the centre of the floor and modern types of windows and ventilators are also provided in the walls.

Houses with lantern-type ceilings

This group of houses is found predominantly in all parts of the district with different variations and includes the Khowar Khatan or Baipash type, the Bashgali type, the Kalash type and the Wokhi type. It would be worthwhile to examine the different types of houses which have resulted from the socio-economic, traditional and physical conditions of the area.

1. Khowar Khatan or Baipash type

This type has its origins among the Khow tribe which forms the majority of the population throughout the district. The type is also found in the valleys of Gizar, Yaseen and Ishkuman valleys in the Northern Area of Pakistan. The reason being that the Khow population spreads as far as Gupis in Gilgit Agency (Northern Area) and thus, through traditional and historical contacts with the people belonging to other language groups, has made an impact on the house types of the area.

It is believed that this type was introduced into the region a long time ago from different parts of Central Asia from where the different waves of the Khow immigrated in the course of history. The earliest of these people are thought to be of Aryan stock who invaded and occupied these valleys about three thousand years ago coming through the northern passes of the Hindu Kush. At one time, it is believed, the whole of the area from Nuristan (Afghanistan) to Astor (Gilgit

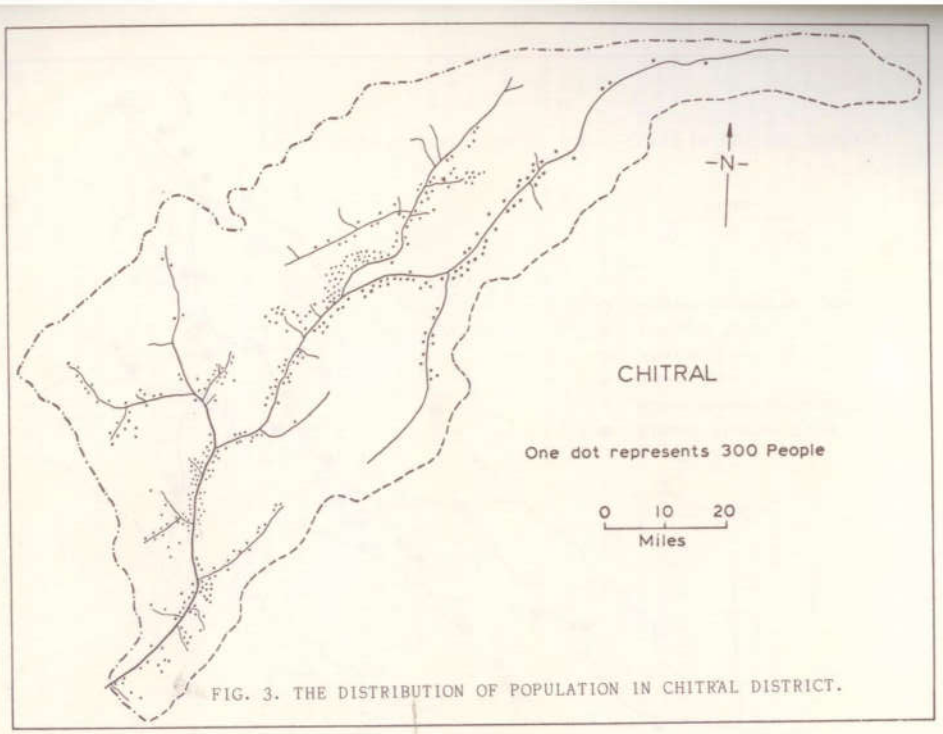


FIG. 3. THE DISTRIBUTION OF POPULATION IN CHITRAL DISTRICT.

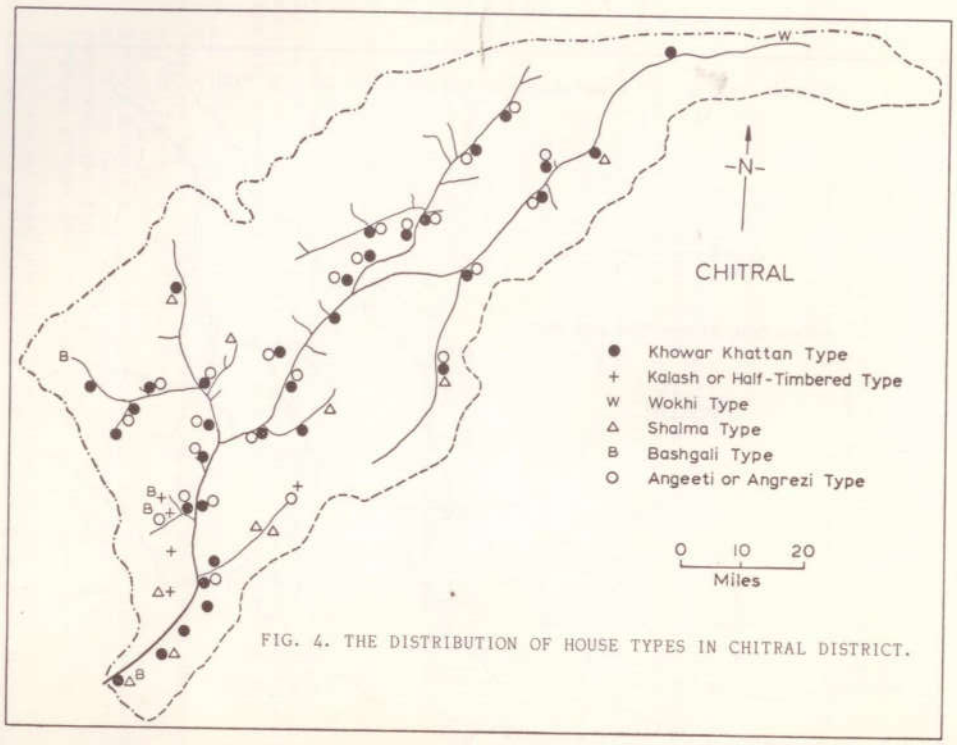


FIG. 4. THE DISTRIBUTION OF HOUSE TYPES IN CHITRAL DISTRICT.

Agency) in the Northern Area was occupied by one homogeneous race. But subsequently, as Biddulph suggests (1) the area was split into two parts, 'by a wedge of Khow invasion, representing members of different but related tribes coming from the north'. It is thus concluded that the Khow came and settled in these valleys later than the first wave of Aryans, belonged to the same race but had adopted certain traits of the Ghalcha speaking people of the north through long contacts with them in the area before crossing over into Chitral. In later periods until the modern times, people have been coming into the area from the surrounding regions of Badakhshan, Wakhan, Russian and Chinese Turkistan, Gilgit Agency, Dir and Swat districts of Pakistan and parts of Afghanistan in the form of refugees, invaders or as followers of the ruling class who were at first adventitious and sporadic squatters but they made themselves at home subduing, dispossessing and oppressing the existing primitive stock.

These later immigrants despite their different origins and backgrounds, absorbed themselves into the original Khow by living in the same villages, intermarriage and by adopting their language, Khowar, and their customs and other ways of life. In later years Islam, which they all had embraced, played an important role as a unifying factor. Thus these people, having ethnologically and historically different backgrounds and consisting of hundreds of clans and families are one people today and all called the Khow; see Fig. 5.

The Khowar 'Khatan', which is the traditional house of the tribe, seems to have been introduced to the area from the time they have been living in these valleys. The typical "Khowar Khatan" is always square and one storeyed. Attached to it is a verandah, in the case of the warmer areas, or 'dahlenz' (closed corridor) in the colder areas. It is believed that the verandah is a recent addition. Its height is normally twelve feet and the floor area is 25 x 20 square feet. The floor area of the house would vary according to the number of family members and also their economic condition and the height is mainly determined by the physical and climatic conditions of the area; the colder areas having houses of height about six or seven feet. The house has no windows, nor ventilators. The smoke hole is in the roof which is mostly about fourteen inches square and serves the purposes of letting in light and letting out smoke. The door is about 6 feet x 4 feet in height in the lower and warmer areas, and about 4 feet x 2.5 feet in the colder parts; see Figs. 6 and 7.

The whole roof structure is mainly supported by four large wooden posts in the middle and 8 to 10 small posts free standing against the walls. The walls give partial support to the roof and also provide the weather protective envelope to the activities carried on inside the house. The four central posts carry beams of about 8 x 8 inches, or of varying thickness according to the nature of the wood, over which the beams form a diamond-shaped ceiling, stepped up in four (or in certain cases, five) levels of about six inches each, culminating in the carved sides of the square smoke-hole. The parts outside the four central pillars are made straight with the help of joints and planks of different thickness. Grass or brushwood is laid on the roof timbers to preserve the wood and then is plastered thickly with straw mixed mortar, rising to a mound around the smoke hole. Thus from the outside the roof of the house is flat on all sides and bulging in the middle. The roof also slightly overhangs the walls and flat stones are placed

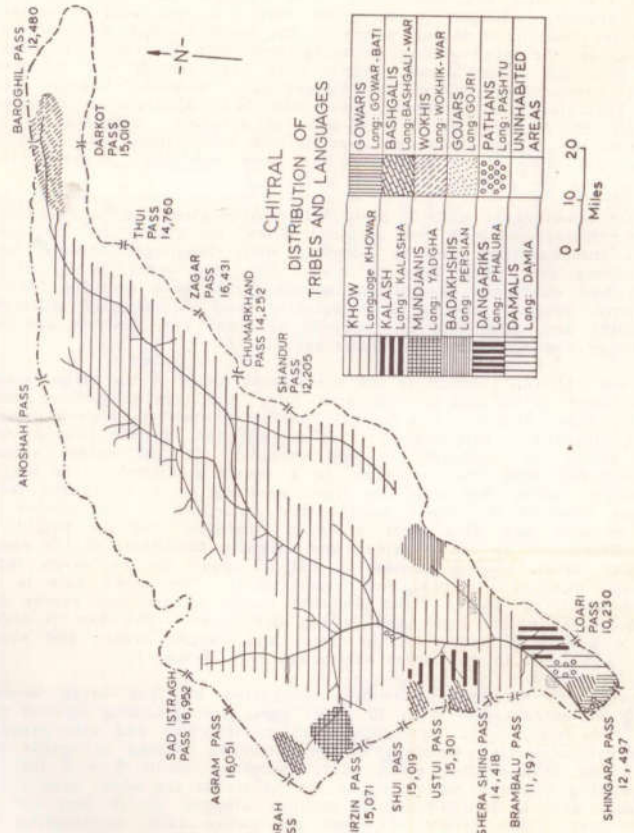


FIG. 5. THE DISTRIBUTION OF TRIBES IN CHITRAL DISTRICT.

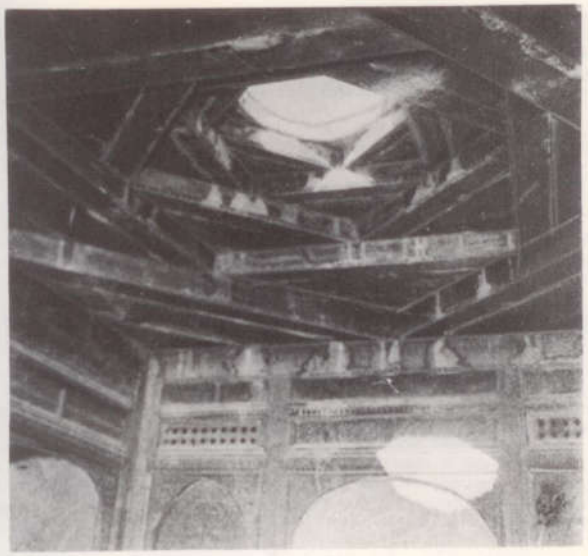
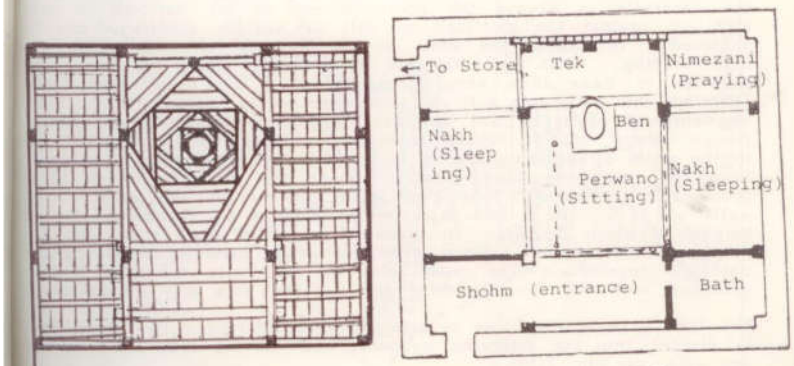


FIG. 6. OCTAGON SHAPED CEILING OF KHOWAR KHATAN.



a. Ceiling Plan

V F P A N D A H

b. Floor plan

FIG. 7. SECTIONS OF A KHOWAR KHATAN OR BAIPASH.

at the edge of the roof to protect them from melting snow or rai
The roof plastering is done in such a way that the rain water eas
drains towards gutters, which are fixed at the edge of the roof. Wo
shortage is an acute problem in most parts of the area which forbi
the use of wood for building the roof. Roofs, which are therefo
built with mud plaster, are made mostly flat to avoid the danger
being washed away by the rain or melted snow if it is made stee
The roofs are also used for drying maize and storing fodder. In so
cases they are also used as threshing floors. This is probably t
most satisfactory explanation for the building of a flat roof even
areas with abundant wood. The wood used in the construction of
house in Chitral varies according to its availability. In upper are
poplar is generally used as there is no other wood locally availabl
In the rest of the region sufficient pine is available for constructi
purposes; see Fig. 8.

Materials used in walling of the houses include slate stones, cobbl
sun baked bricks, earth, etc. Many different types of stone
e.g., slate, schist, crystalline limestone, granite, gneiss, etc., a
found in abundance in various parts of the district, and walls a
constructed mostly in local stones. The people generally use irregula
masonry for the construction of the walls which will be composed
undressed field stones, quarry faced stones, or straight undresse
field stones, in each case obtained from the ground close by the buildin
under construction. The stones are, however, placed in such a skilfu
manner that the outer side of the wall often looks plane and smooth
The interior of the walls are normally packed with small loose piece
of waste stones or mud.

There are areas where, for various reasons, people use sunbaked brick
with stone foundation. In certain cases, depending on the availabilit
of suitable stone, only the upper half of the wall is made of bric
and the lower from stone. While making the walls, the jointing o
the materials is always the great concern of the builders so tha
stability against the roof-load as well as weather conditions can b
achieved. In Chitral the walls of the 'Baipash' are not necessaril
load bearing. With the available materials it would not have bee
possible to make them very strong to hold the heavy roof load
Therefore the walls are built only to give partial support to the roof
as mentioned earlier. But the area experiences frequent earthquakes
though mostly not of severe intensity, causing considerable damag
to the walls by creating cracks in them or by causing total collapse
Moreover, rains sometimes greatly damage the walls. All of these
problems are seriously considered while constructing the walls. Th
walls are 2.5 to 3 feet thick and are lined by horizontal logs a
heights of about 3 feet. In areas of abundant wood such logs ar
placed one foot apart. Straw mixed mortar is used for cementing th
materials together. The outer side of the walls are also thickly
plastered with the same material and finished with clay distempering.

The floor plan of the house is also worth considering. The whole floor
is divided into the following portions, each having separate functions
and uses; see Fig. 7(b).

(i) The Shohm: This is the entrance space where shoes are placed
before entering other portions of the house. In the case of
poor people, certain parts of this portion are also used for
storing agricultural and other implements and for keeping newly

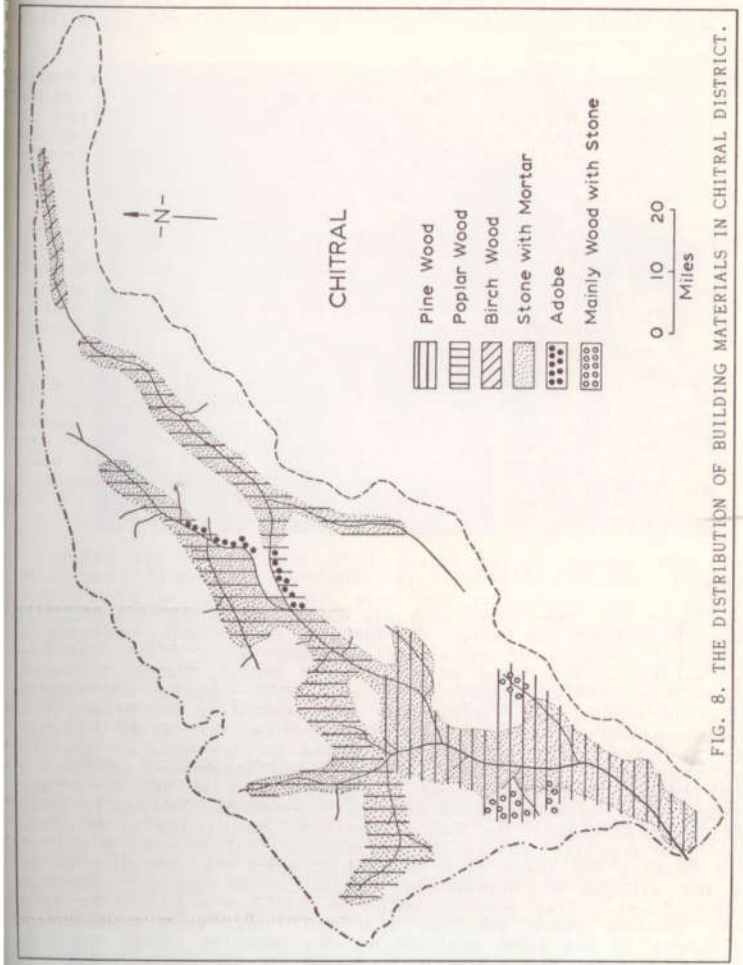


FIG. 8. THE DISTRIBUTION OF BUILDING MATERIALS IN CHITRAL DISTRICT.

born calves or kids.

(ii) Shung: This is one corner of the 'Shohm' but raised for storag of wood and for keeping chickens. In certain cases this corne is walled on all sides and turned into a bathroom to be use by the womenfolk.

(iii) 'Perwano' and 'Ben': The portion on three sides of the hearth is separated from the 'Shohm' by wooden boards called 'Taktabandi' and used for sitting purposes. This part is further divided into two parts, i.e., the portion towards the Shohm, called the Perwano, is used by younger male members of the family while the other portion, called the Ben, is used mostly by the father or elderly person in the house.

(iv) 'Tek': This is the back portion of the house raised, from end to end, about a step from the rest of the area. This portion is used by the female members of the house. Along the wall on the back of the Tek are cupboards or shelves to keep utensils etc. On one side of the Tek is the praying place, mainly for the women, while on the other side is an entrance through a small door into an attached store room.

(v) The 'Nakh': On two sides of the Perwano and Ben and along the side walls are the Nakh which are separated by 'Taktabandi'. These portions are used for sleeping. In the colder areas the 'Nakh' are filled with grass and straw over which rugs, quilts, etc., are placed to be used as beds. In warmer parts cots are placed in them to be used for beds.

2. The Kalash type

This type belongs to the Kalash tribe who live in the valleys of Bamburat, Birir, and Rumbar. The tribe is composed of about 3,000 souls who are non-Muslims and have different ways of life, customs and traditions. They have, strangely enough, succeeded in maintaining their old beliefs and culture in the face of increasing influence of Islam and centuries of domination by alien people. It is believed that the Kalash immigrated to the different valleys of Chitral sometime in the 10th or 11th century A.D. from certain parts of the Nuristan Valley in Afghanistan. During the 10th century of the present era, Sabugtagin and his son, Mahmud of Gazni, the then Kings of Kabul, were waging war against the infidel tribes in the region of Jalalabad and Lughman. These tribes, who are now inhabitants of Nuristan (Afghanistan), could not stand the attacks and so had to retreat, pushing back the tribes inhabiting the upper valleys between Lughman and Lower Bashgal. The Kalash who were then living in this area could not face the attacks of the retreating tribes and so in their turn invaded the lower parts of Chitral which they occupied as far as the villages of Baranis or Rashun (about 30 miles north of Chitral Town). They remained rulers of this part of Chitral for about three hundred years when in 1320 A.D. they were defeated and subjugated by the Khow who had by then accepted Islam. With the passage of time, the Kalash who remained in the main valleys with the Muslim Khow, were greatly influenced by them and so accepted their religion and adopted their customs and language. On the other hand, the Kalash who lived in the valleys mentioned above and those who had retreated there later were, due to their seclusion but mainly

because of the tolerant character of their neighbours, able to continue their old practices.

The typical house of the Kalash is double-storeyed and mainly made of wood; see Fig. 9. The main room which is on the upper storey

FIG. 9. A KALASH HOUSE IN BUMBORAT VALLEY.

is built on the same pattern as the Khowar Khatan. A balcony is attached to the house or the upper storey made by laying wooden planks. Roof adjustment and plastering of the roof are also made in the same way as in the former case. The walls are timber based in which horizontal logs are used with rubble stones embedded in mud mortar. The placement of the horizontal logs varies from less than 1 foot to 3 feet depending on the nature of the site of the house. If a house is built on a slope of the hill, then the horizontal logs are placed at smaller intervals and if the site is on a comparatively stable place then the interval is up to 3 feet. The foundations of the walls are however, built with stones only. The horizontal logs are jointed together at the corners with great skill. The walls are plastered with mortar with straw from inside, and sometimes from outside. The area has abundant pine, spruce, and fir, and therefore there is no problem of availability of wood materials for construction purposes.

The height of the whole house from the ground is about fifteeen feet, out of which the upper storey, which is the living part, is ten feet and is reached from the ground by a ladder. The floor plan is almost the same as in the case of the Khowar Khatan.

3. Bashgali type

The Bashgali tribe, or Shiekhan as they are called by others, liv in different parts of Chitral district such as Gobor in the souther part, Rumbur and Bumborat in the northwestern part and Langur-ba in the south. Their total number is approximately 4000. The Bashgal are the descendents of those immigrants who were formerly non-muslim and lived in the Nuristan valleys of Afghanistan. They have bee called Red Kafirs by foreign writers to distinguish them from the Kalas who are termed Black Kafirs, and the area was named Kafiristan. Their immigration to their present abode took place in the last decad of the 19th century when the conversion of their community was enforce by the Amir of Afghanistan. In consequence, most of them wer converted to Islam but these people took refuge in Chitral and settle in the areas mentioned. They practised their old religion until th 1920's at which time all of them voluntarily embraced Islam.

The Bashgali houses - see Figs. 10 and 11 - are very much like the ones built in Nuristan valley today as the environmental conditions of the new area (except Gobor) where the tribe has now settled, are the same. The houses are mostly situated on the steep mountainside in order to spare the fertile and flat lands in the valley bottoms for cultivation and also to attain a good view of the valley. The Bashgali houses are often two-storeyed, sometimes even three. The upper floor of the house comprises the main room called the 'ama' the roof of which is supported by four decorated wooden cedar pillars around the fireplace. The roof is built up similarly to the lantern-type ceiling of 'Khowar Khatan' and the Kalash type. The entrance to the main room is the only entrance to the house. The lower floor, which serves as a storeroom, is entered through an opening in the floor in a corner of the main room. This opening is usually closed with a trap door.

The typical feature of a Bashgali house is that the two beams under the roof run at slight angles to the entrance wall and traverse the roofed verandah at the same level and together with the uppermost beam in the lateral walls. Here they are supported by a row of pillars with very fine decorations and by the ornamental front structure of the house.

The wall of the main room or the 'ama' is built of horizontal logs kept in place by vertical poles, which are a little shorter than the depth from floor to ceiling in the 'ama' and which in turn are supported on both sides of the wall by an upper and lower wooden clamp (containing two holes) that have been inserted horizontally through the wall so that their two ends project from the wall. The walls may consist entirely of horizontal wooden logs or timbers but usually in place of every second log there is a layer of stones and mud.

It is characteristic of house building of the Bashgali tribe that up to five houses can be built together simultaneously giving room for several households within the same family. The upper storey of the house always contains a closed verandah with the main house or 'ama'. If the owner cannot afford to build the decorated verandah immediately the house may stand unfinished, the beams of the roof projecting into the open air for years.

In the Gobor area where there is a problem of wood shortage, the Bashgali cannot afford to build such ambitious wooden houses as in other valleys.

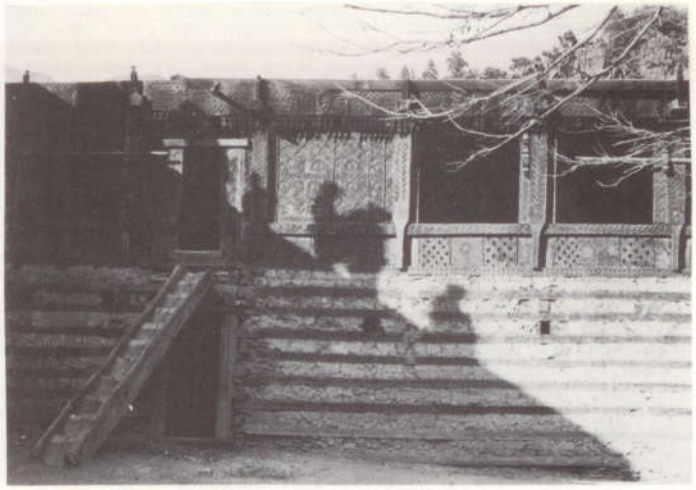


FIG. 10. A BASHGALI HOUSE IN BUMBORAT VALLEY.

FIG. 11. ANOTHER BASHGALI HOUSE IN BUMBORAT VALLEY.

There the houses are mostly one-storeyed made of stone and mort and birch or poplar wood, which is brought from other villages nearb The distinguishing feature of these houses is that they have squa or, less often, round wicker receptacles covered with mud, called 'chakk or 'guzzuli' used to store grain and are fixed on roof tops. The storage receptacles resemble a jumble of chimney pots on the top the house. This shows how, in changed circumstances, grain stor have been relocated to the top of the roofs instead of on the groun floor.

4. Wokhi house type

This type is found in the Baroghil area which is inhabited by th Wokhi tribe who are a recent migrant tribe to the area from Wakha in Afghanistan. The area is about 12,000 feet above sea level an is situated in the neighbourhood of huge glaciers and is covered wit snow for more than seven months of the year. The houses though ar a lantern-ceiling type but are only seven or eight feet high; se Fig. 12. The roofs have chimney holes of about nine inches in diamete which is the only way to let in light. During rain or snow or durin the night the hole is closed by a lid being placed over it. The doo is built only 30 inches high. The building materials are mainly ston for walling and birch wood for roofing. The roof covering is don with stone slabs; grass and manure-mixed mortar is used for plastering. The walls are also covered with manure-mixed plaster and every precaution is taken to leave no gaps anywhere. The entrance to the house is made through many closed corridors, numbering from two to six, depending on how much one can afford.

A few variations regarding the floor plan of Wokhi houses are worth mentioning:

(i) The Wokhi house has five central pillars, two on one side and three on the other for carrying the beams of the central octagon over them.

(ii) One corner of the 'Shohm', from where entrance is made into the house, is turned into a closed corridor by erecting walls on all sides up to the roof. The way in is left between the two central pillars on the side of the entrance.

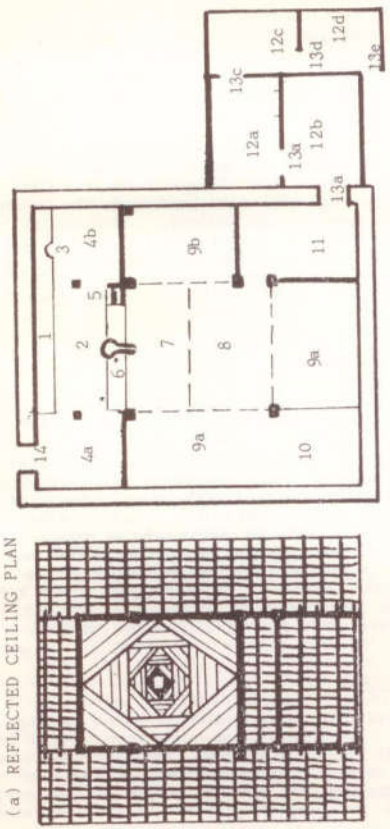
(iii) The 'Tek' is raised high, compared to other house types, and is about two to three feet. The fireplace is made like a deep oven in the 'Tek' but underneath the smoke hole towards the front.

(iv) The side portions including the 'Shohm' are furnished with woollen rugs and other materials and used both for sitting and for sleeping.

(v) At the corners of the Shohm and Nakh, big wooden boxes are placed for storing grain and other belongings.

FLAT ROOF HOUSES

Though the lantern-ceiling type of houses mentioned above have flat roofs around the central bulge, the flat roof houses have no central bulge



KEY:

1. BRICKCHIKISH: RAISED SITE ALONG THE BACK WALL FOR PUTTING UTENSILS ETC.
2. CHIKISH: ABOUT 3 FEET RAISED PLATFORM USED BY WOMEN-FOLK FOR SITTING
3. DIL-DURG: SMALL FIRE PLACE
4a. BALAND CHIKISH (LEFT): USED FOR ENTRANCE TO STORE. ALSO USED FOR PUTTING WOODEN BOX FOR GRANARY
4b. BALAND CHIKISH (RIGHT): USED FOR PUTTING UTENSILS AND SOMETIMES FOR COOKING
5. STAIRS
6. TANOOR: DEEP OVEN FOR COOKING AND HEATING
7. YORCH BALA: FOR PUTTING WOOD
8. YORCH PAIN: ENTRANCE
9a. LUP RAISH) FOR SITTING AND SLEEPING
9b. PUT RAISH)
9c. PAST RAISH)
10. BALAND RAISH: 3 FEET HIGH PLATFORM FOR PUTTING BOX FOR GRAINS ETC
11. KUNJ: THRESHOLD
12. DAHLENZ: CLOSED CORRIDOR
13, 14. DOORS

FIG. 12. TWO SECTIONS OF A WOKHI HOUSE.

at all. In this case the roof is completely flat from end to end. This type of house has further subtypes, e.g., the 'Shalma' type and the 'Angeeti' or 'Angrazi' type.

1. 'Shalma' type

This type is popular among the tribes called Gojur and Dangarik who inhabit different parts of the district. The Gojur are a semi-nomadic tribe and so, in spite of inhabiting some of the well-wooded valleys, live in wretched huts no better than those of their animals. Their houses, which are called 'doogoors' or 'bothies', are built by piling up flat stones to make the walls which are without any regular height or breadth. The roof, which is flat, is built by placing dried grass and pieces of wood on one or two beams and a few branches and then covered with mud. The chimney hole in the roof is also left open.

The Dangariks who live in Ashrat valley, also make houses with a flat roof. Their houses are of a better standard than those of the Gojur. The Dangariks migrated from Tangir valley in the Northern Area about seven generations ago and first settled in the Ashrat valley and later spread to the surrounding valleys. Originally, they are related to the Shina people living in the Gilgit Agency region in the Northern Area where the flat roof type of houses are common.

The area is well-wooded with pine and other important species of construction wood. Therefore a lot of wood is used in lining the walls and also in roofing. Smoke holes are left open in the roof and no windows or ventilators are provided in any other part of the house. This house covers an area of about 20 x 25 feet.

The roof structure is erected on a number of beams carried by many pillars standing in about three rows, two of them along the walls and one in the middle. Thus the walls, which are about two feet thick are not fully load bearing and give only partial support to the roof. Joists and wide boards are placed over the beams for covering the roof. Grass or brushwood is laid on the roof timbers to preserve the wood, and this is further covered with about nine inches of clay. Rafters project slightly outside the top of the walls and a rough parapet is formed of flat stones at the edge of the clay roof. The roof, though mainly flat, slopes slightly to the back of the house where a wooden spout carries away the rain water. The walling is done with rough stones set in mud mortar stabilised by horizontal logs at a height of two feet. The walls are then plastered, outside and in, with clay mixed with chopped straw.

2. 'Angeeti' or 'Angrazi' type

The characteristic feature of this house is that it has a flat roof without a bulge or smoke hole. The chimney is placed on one of the walls in which the fireplace is made. Windows and ventilators are also provided. This type is called 'Angrazi' or English because this was introduced in the area during the British period. The adoption of this type is the result of the people's greater contact with other parts of the world, a contact which has greatly increased during the past 50 years or so. This house type is now often combined with the Khowar Khatan or other types of houses and is frequently used as a guest room.

Recently certain well-to-do families have been using corrugated steel sheets for roofing such houses. Thus sloping roofs are being introduced by placing the steel sheets over criss-cross wooden frames connected to the walls. Cement and lime has also been commonly used for the construction of these houses.

In these houses the pillars, if at all needed, are erected along the walls, standing freely to support the roof. Wood lining of the walls is also done. In certain cases, when cement is available, only wall plates are used to replace most of the pillars along the walls. No central pillars are used as in other types of house and the floor plan is also simple without any partitions.

THE HOUSE PLAN

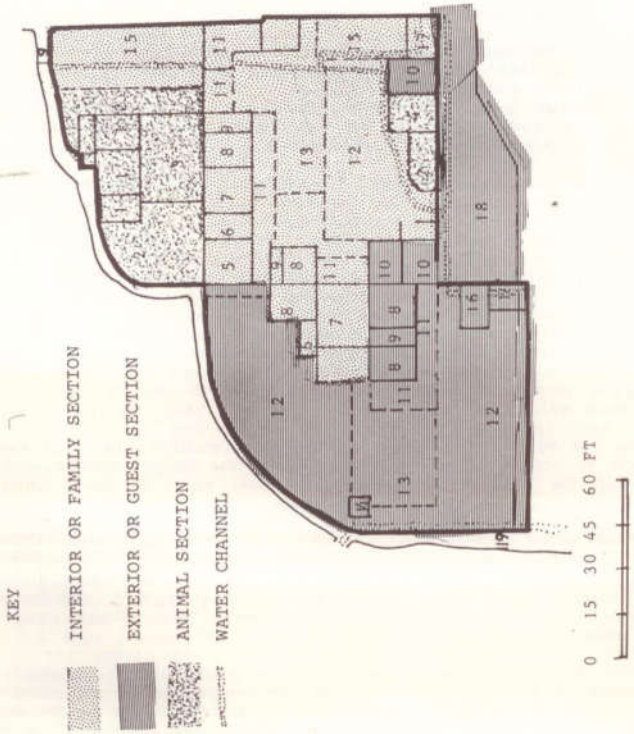
Houses are generally divided into two parts; 1) 'Dur' or human section, and 2) 'Shal Mudi' or animal section; see Fig. 13. These two sections are often attached to each other though in some cases because of certain local factors to be described, the 'Shal' or goathouses are built separately.

The 'Dur' or dwelling section in well-to-do families is divided into two parts called 'andran' or interior and 'beri' or exterior. The former is used by the family and the latter by guests. The two parts are enclosed by high walls which provide separate courtyards or havailis for each. Thus not only is privacy preserved, but security from theft is also assured. These 'havaili' are also made into small gardens.

The number of rooms depends on the social status and total number of family members. The well-to-do families have about six rooms for family use, two guest rooms and four rooms for servants. An ordinary 'dur' consists of two rooms, except for the Gojur, Wokhi and Kalash tribes who have only one room and a store. The Khow are generally fond of attaching a small garden to their houses, so even with the ordinary 'dur' one often finds small gardens attached. The house is entered through a verandah, but in the colder areas a 'dahlenz' or closed corridor is built instead. The Wokhi type of house mentioned earlier is always attached to a 'dahlenz' because of the high altitude at which they are situated. The Kalash and the Bashgali use only a verandah or a balcony. The Gojur who live mainly in the warmer southern parts of the country use neither a verandah nor a dahlenz.

The 'mudis' or byres are, except in the Kalash valleys where the whole animal section is separated, always attached to the human section of the dwelling. But the 'shal' or goathouse in most parts of lower Chitral is built separately. A 'shal' or goathouse normally includes a shed, two rooms for goats, one barn and a hut for the shepherd. A byre has one shed, three rooms (separately for oxen, cows and calves) and a barn. The number of rooms increases according to climate, and the economic conditions of the people. For instance, in the colder area where a long spell of cold weather and snow necessitates much storage accommodation, we find more than one barn. Those who possess large flocks have to provide more rooms.

In view of what is stated above, we can distinguish two principal types of houseplans in the region. These are single houses and multiple dwellings. The former have human and animal accommodation on the same site attached to one another and the latter have either the 'shal' or the



1. BYRE
2. CATTLE SHED
3. BARN
4. STABLE
5. KITCHEN
6. STOPE
7. BAIPASH
8. 'ANGEETI' OR 'ANGRAZI'
9. BATH
10. 'SHALMA' (for servants)
11. VERANDAH
12. ORCHARD
13. YARD/LAWN
14. WATER TANK
15. KITCHEN GARDEN
16. GARAGE
17. TOILET
18. OPEN SPACE TOWARD MAIN ENTRANCE
19. STREET CONNECTING WITH VILLAGE HOUSES.

NOTE: The goat house is at a separate site on the hill-side, about ½ mile away.

FIG. 13. PLAN OF A KHOW HOUSE.

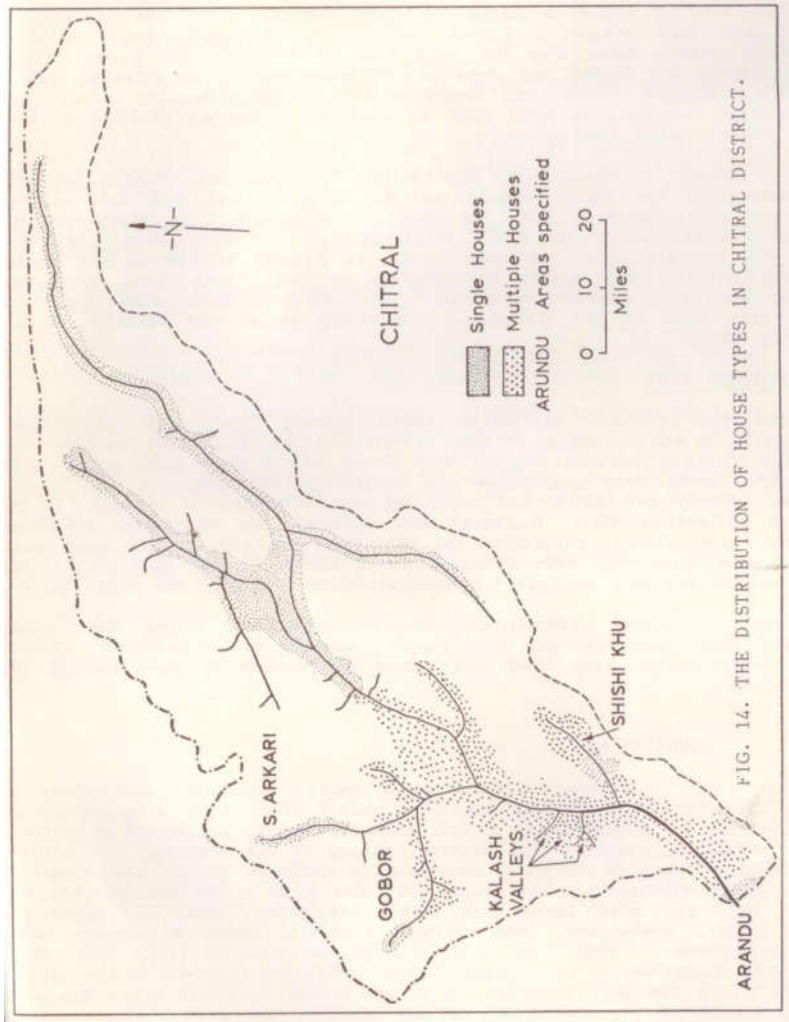


FIG. 14. THE DISTRIBUTION OF HOUSE TYPES IN CHITRAL DISTRICT.

whole animal section on separate sites.

Distribution of Single House Type

This type of house is found in Upper Chitral. But the villages of Gobor and Siah Arkari in Lotkuh tehsil (Fig. 14) and Arandu villages *in Drosh tehsil, have also the same type of houses. In Upper Chitral* mainly sheep are reared and stock are accommodated in an attached animal *section. Because of the long severe winters, animals are fed indoors and* it becomes necessary to keep them as near the house as possible so that they can be looked after properly.

The houses of Gobor and Siah Arkari villages are without separate accommodation for stock because of the long winters and for security reasons, particularly as they lie close to the border. In Shish Kuh the pastoralist belongs to the Gojur tribe mainly. In most cases, they live with the animals under the same roof. In Arandu village on the border of Afghanistan there arises the problem of theft, both from inside the village and from across the border. A number of Gojur also live there possessing most of the livestock. Thus the social and security factors coincide here.

The Multiple Type

This type prevails in Lotkuh tehsil (except Gobor and Siah Arkari villages), the Kalash valleys, Urtsoon, Damil, Ashrat and Beori valleys and certain villages between Kogoozi and Drosh where they keep goats. In all these areas only goathouses are built separate from the rest of the house. Sheep and cattle are kept, however, attached to the 'dur'. In the Kalash valleys of Birir, Bumborat and Rumboor, the women are forbidden to look after flocks, especially the goats, so the animals are kept away from women 'lest they (the animals) would become impure and die'. The same custom prevails amongst the Bashgali tribe living in the same valleys.

Many people are superstitious and are afraid of losing their goats if they kept them amongst the 'people' because of 'evil-eye'. Others, more realistically, keep them away from fields because they damage the crops.

CONCLUSIONS

This study indicates that the house types, structures and plans in the Chitral District are the result of man's interaction with nature as reflected by the differences in relief, altitude, slopes, scantiness of cultivatable areas, agricultural cum pastoral nature of the economy, availability of different types of building materials in different parts, and diversity of the people ethnically. The people are quite alive to the different hazards which they are often faced with, e.g., landslides, rockfalls, landslips, flash floods, avalanches, heavy winter snowfall, torrential summer rains and earthquakes. They have tried through centuries of trials and errors to adjust themselves to such circumstances. With the exposure to the outside world during the last 50 years or so new trends in house types are also being introduced in the region which most of the population is slowly and steadily adopting in addition to their old traditional houses.

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The vulnerability and reduction of damage risk in small houses subject to natural hazards

I. Davis
Dept. of Architecture, Oxford Polytechnic

ABSTRACT

The determinants of house forms and settlement patterns are described with particular reference to their vulnerability to natural hazards. Three responses to make low-income houses resistant to extreme forces are identified: the introduction of bye-laws, a total change . house form and the modification of traditional housing. Each is considered in the light of its practical relevance and past performance. Finally, a basic approach to housing modifications is identified which itemises the wide range of factors which have to be considered.

SETTLEMENTS AND THEIR VULNERABILITY TO NATURAL HAZARDS

In the 10-year period between 1965 and 1975 over 3.5 million lives were lost through natural disasters (1). Within this period over half a million deaths were reported in the Chittagong cyclone and sea surge of East Pakistan (now Bangladesh) of 1970. Then in 1976 242,000 were killed and 164,000 injured in the Tangshan earthquake in China. Both of these disasters caused exceptional devastation, but they may be foretastes of the scale of disasters that are increasingly possible due to the marked increase in vulnerability of settlements (2). See Fig. 1.

There is no evidence of any increase in seismic activity, or an increase in the incidence of high winds - hurricanes and cyclones. However, it is now established that the type of extensive flooding that has occurred in the autumn of 1978 in India was partially caused by deforestation on the southern slopes of the Himalayan Mountains of Nepal. This is an example where the agent of disaster (or the hazard) is being adversely affected by the ecological imbalance of the deforestation which is a symptom of poverty. It is now known that the majority of people who die in natural disasters do so as a direct result of the vulnerability of their settlement location (and possibly the constructional form of their houses) to the forces that are exerted in earthquakes, high winds or flooding. It is also known that the victims of disasters are the poorest sections of the population within the poorest countries of the world. There is in effect direct correlation between poverty, vulnerability and casualties. (3)