THE NORTH-WEST FRONTIER OF WEST PAKISTAN

A Study in Regional Geography

BY

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with the collaboration of

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PREFACE

If a people are to cope intelligently and effectively with their environment, especially one as difficult as the North-West Frontier, they should first be able to understand it as a regional geographic entity. Although a considerable amount has been written about the Frontier, very little of this material, apart from reports of military campaigns or revenue collection, includes integrated statistical evidence, and none deals with it as a single geographical unit containing interrelated parts. The task of this book is to analyse the North-West Frontier of Pakistan in a systematic, regional manner with the express hope that it may provide the necessary base upon which other, more detailed, and eventually more practical studies can be carried out in the area.

Because of the nature of the study it was necessary to conduct a field research programme which lasted nearly nine months. By working out of Peshawar in a jeep driven overland for the occasion, field work was carried out on practically every part of the Frontier, including four trips into the independent tribal areas. In order to prevent the study from getting lost in generalities a considerable amount of this time was spent working at a village and even individual level; a number of surveys were made in this connection, some of which are included in the text.

Since an intimate connection has always existed on the Frontier between the people and their physical surroundings, an effort has been made in this work to incorporate as closely as possible the sections dealing with physiography and climate with those based on administrative divisions. A chapter on current social and economic conditions on the Frontier is also included.

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THE NORTH-WEST FRONTIER

INTRODUCTION

THE North-West Frontier is a well-defined region with a long and unique history. It is inhabited very largely by Pathan tribes, and it is to these tribes that this study is limited. Considerable numbers of tribesmen who consider themselves members of the Pathan family inhabit the territory between the Gomal Pass and the coast of Mekran, in what is called Baluchistan. It is possible to delineate those areas of Baluchistan inhabited by Pathans from those areas inhabited by true Baluchis by drawing a line which would run from Chaudwan in Dera Ismail Khan, through Thal-Chotiali and Sibi to Chaman. Though any such 'ethnic frontier' can only be an approximate one, the Pathan tribes of Baluchistan would, generally speaking, be found north of this line. The main Pathan tribes in this region are the Kakars, Tarins, Panis and Shiranis. But relative scarcity of data on the Pathans living in Baluchistan and the great convenience of dealing with a region for which figures and censuses have been compiled for many years led the author to exclude these tribes from consideration in this study. The reader should not forget, however, that the Gomal Pass is a political not an ethnic frontier.

Lying between the NWF and the Afghanistan are the Frontier Agencies and states.[1] This is the homeland of powerful Pathan tribal groups, which as a result of peculiar historical and physical circumstances have managed to preserve an independent way of life, free from any outside political domination. Relying on the inaccessibility of their country, these tribes have for centuries defied all who have tried to dislodge them from their strategic position astride the natural gateways leading from Central Asia into the Indo-Pakistan sub-continent. Their character, organization and instincts have made them independent and strongly democratic, so much so that even their own leaders have little real control over them.

Although the NWF had been a borderland area of great importance for many years preceding British rule, its status as a frontier

[1] The Frontier States, i.e. Chitral, Dir and Swat, are still controlled by more or less absolute rulers who exercise their power at the discretion of the Pakistan Government. The Agencies consist of North and South Waziristan, Kurram, Khyber, Mohmand and Malakand.

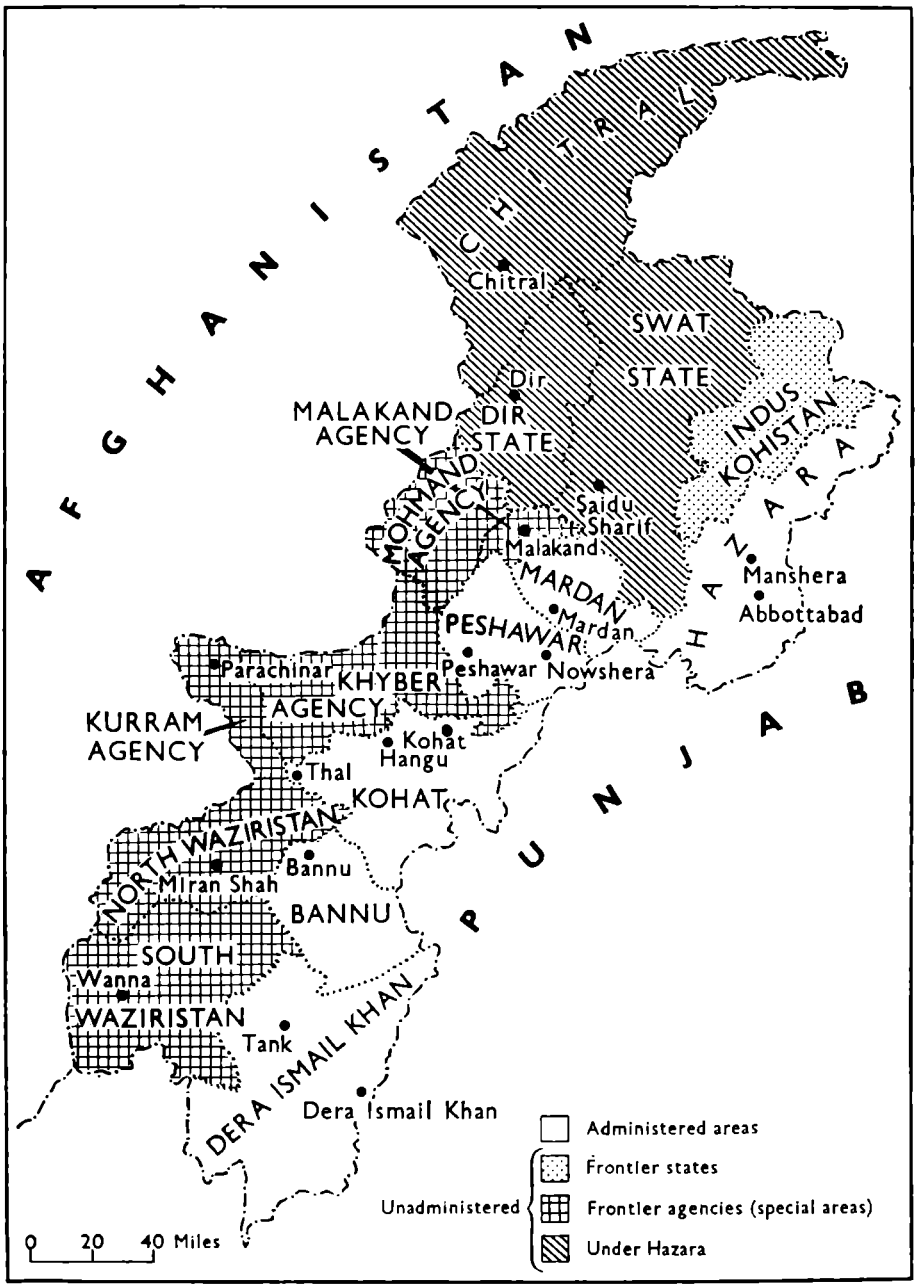

Fig. 1. The N.W. Frontier: Administrative Divisions

zone came into even sharper focus after the British conquest. All through the nineteenth century, as British power in India expanded, buffer zones were created in order to protect newly won territory. This process repeated itself until British influence finally reached the border of Afghanistan. The Afghan and British governments agreed on the international frontier in that area through the Durand Agreement of 1893, which established the famous Durand Line. The North-West Frontier Province itself was created in 1901, and embraced the districts of Hazara, Peshawar, Kohat, Bannu and Dera Ismail Khan. At this point the acute problem arose of how to deal with the hostile and formidable tribes living in the buffer between the 'administered' districts and the border. Since that time, and even with the transfer of power to Pakistan in 1947, this problem has been the subject of a great many serious controversies. It has still to be solved. But as a legally constituted province in Pakistan the NWFP ceased to exist in October 1955.[2]

THE NWF AS A TRANSITIONAL AREA

Few areas in the world have played so notable a role as a transitional zone between peoples and cultures as the North-West Frontier Region of Pakistan. From a physiographical point of view, the NWF lies between the highland massif of central Asia and the plains of Hindustan. The physical structures which separate these two areas from each other, such as the Hindu Kush range, as well as those structures, which provide access between the areas, such as the Khyber Pass, are located on the Frontier. As a result, the NWF has been the site for a continual cultural flow across its territory. When populations themselves did not move through the Frontier's passes, armies seeking to conquer or control central Asia and northern India have been almost irresistibly attracted to this region. In their language, customs, and features the Pathans themselves reflect the history of the area.

The tribesmen offer still another testimony to the influence of physical environment on human culture. The resources of their homeland were understandably little exploited while the Pathans could exact tolls from powers which wanted safe passage through the region they controlled. Because of the craggy wilderness of their mountains, the Pathans have been able to remain free of the troublesome external authority of social institutions in a way that is almost unprecedented in the history of either the eastern or western world.

[2] In 1931 Mardan was detached from Peshawar and made a separate district. Under the 'one-unit' scheme which officially abolished the NWFP a Commissioner was appointed to run the three northern districts (the Peshawar Division) and another to head the three southern ones (the D.I.K. Division).

But with the great changes of recent times on the Frontier, the Pathans are no longer able to live 'off' their environment, as they have for centuries. The rapid decline in the strategic value of the NWF has confronted the Frontier's population with an enormous challenge —they must now somehow learn to live 'on' the land they have so long lived 'off'. Whether the Pathans can re-adjust to the new challenge of their physical environment is the central question of the Frontier today.

PHYSIOGRAPHY

Until recently any investigations of a geomorphological nature about the Frontier were mainly concerned with its strategic location. This was largely a result of its role as the guardian of the most accessible overland routes into the Indian sub-continent from central and south-west Asia. The fact that a single jet bomber now packs more fire power than an entire army of former days, and that political subversion has, for the most part, superseded armed aggression as the foremost means of territorial conquest, has undoubtedly nullified to a large extent the Frontier's former locational importance. Had it not been for this initial prominence and the economic advantages derived by the tribesmen from the artificial situation it created, the Frontier would certainly never support the large population it now does. Today a Pathan finds himself in the unenviable position of discovering that the terrain which was once his greatest asset for profitable guerrilla operations has now come to mean something far more direct and important to him in terms of his daily sustenance. Where once he could use his inhospitable hilly surroundings simply as cover and concealment from enemy fire, he must now find some way to eke out an existence from them.

Such considerations, appraised as they must be in relation to the region's low level of economic and social development, are significant proof in themselves of the increasing importance of physical geography on the Frontier. The fact that most previous physiographic studies were carried out essentially as part of an overall military operation and hence were necessarily restricted in their scope has, however, left serious gaps in the total geological knowledge of the Frontier region. Of course, cognizance must be taken of the difficulties involved in even gaining access to many of the 'independent' tribal areas, let alone in being able to run any sort of systematic geologic survey. It should be noted in this respect that even the current operations of the Pakistan Geological Survey in some tribal areas have been curtailed to the point where getting rock samples from these areas is dependent on the goodwill of the local tribesmen.

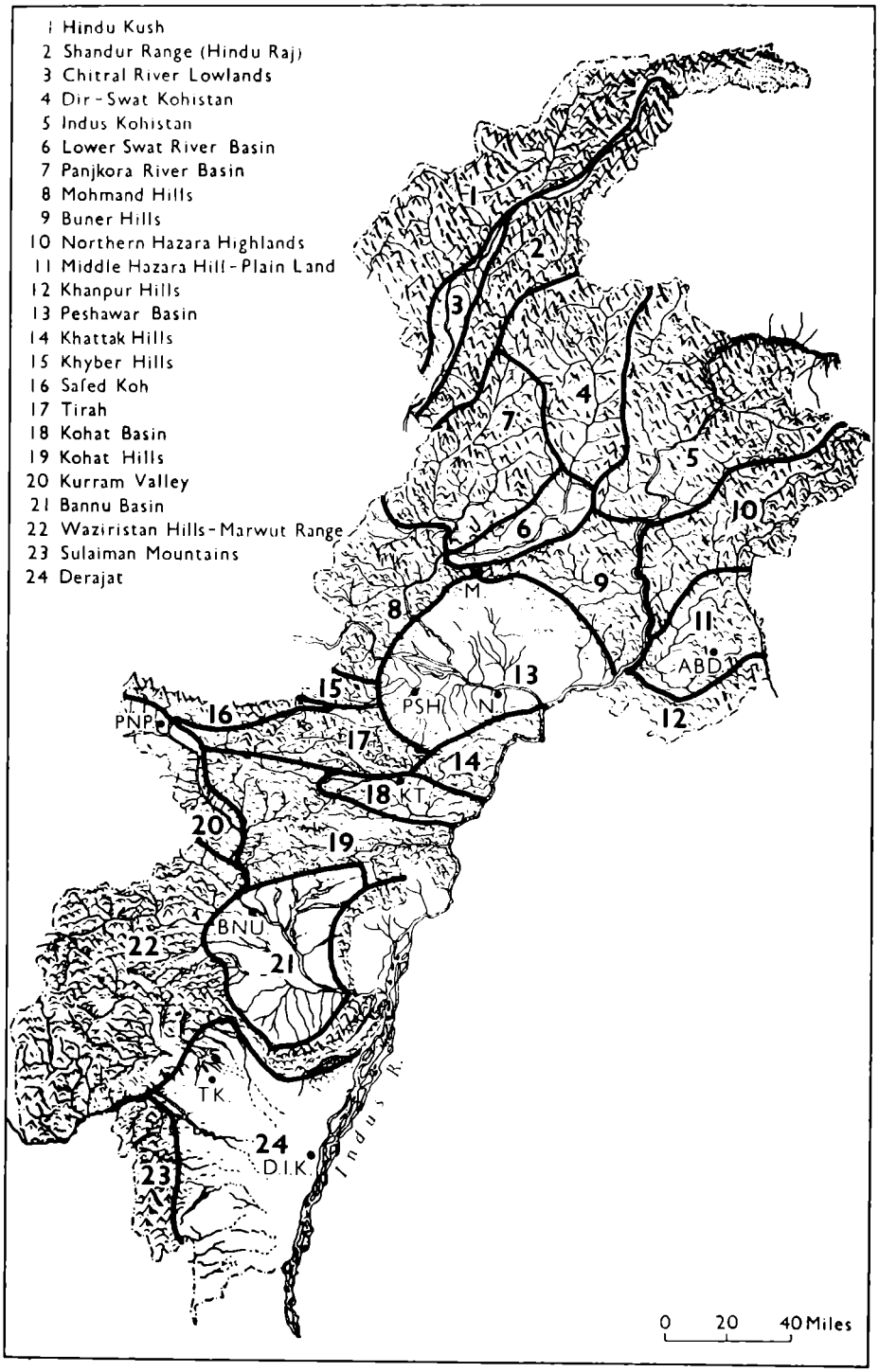

Fig. 2. The N.W. Frontier: Regional Physiography

By an abrupt shift of emphasis, the Frontier tribes have now become economically dependent upon their rugged environment, once a kindly and helpful asset to them in their quasi-military operations; they must now gain an entirely new appreciation of their surroundings. In this context it becomes apparent that a much more comprehensive geological survey of the region is required than has hitherto been carried out. By examining its physiographic evolution in co-ordination with a description of the known locations and the composition of the most important rock formations, this study may hopefully provide the necessary base upon which other more exacting and eventually more practical studies could be carried out. The importance of detailed knowledge of a region and its resources is obviously all the more essential for a people—such as the Pathans—who inhabit an environment as harsh as the NWF and who lack the necessary technical knowledge that more advanced cultures might bring to bear in coping with environmental challenges.

Although there has been an eclipse in the international strategic significance of the NWF, which has in consequence forced the people of the Frontier to adopt a much more realistic approach to their physical surroundings, this should not be interpreted to mean that the tribesmen have become any more docile or the Frontier itself less potentially explosive. The 'unadministered' areas inherited by the Pakistan Government are in many ways still as independent of central government administration as they were during the period of British and Sikh control. In addition, the vexing and potentially dangerous international issue of Pakhtunistan looms on the Frontier scene, a direct response as it were to the non-recognition of the limitations of the region and physiography.

With regard to more specific factors of frontier life, such as communications, this book will attempt to trace the overriding influence that the physical structure of the region has wielded on this and other important aspects of the region's development. Lastly, in interpreting the region's economic viability, the physiography will have to be studied closely in relation to the areal limits of agricultural production, the effects of surface and sub-surface runoff in crop development, and the present as well as future potential of existing soil resources.

The NWF has no claim as a separate physiographic entity. The fact that it shares various geomorphological characteristics with many adjacent, and what may be considered in the strict sense as physical, regions makes this point quite clear. However, as has been explained earlier, the essential reasons for analysing the NWF on a regional basis are twofold: First, because almost all available data deal with

the region studied as a statistical unit, and secondly, because of the overwhelming influence the Pathan people themselves have wielded on their rugged homeland.

This 'Pathan consciousness', as it were, also makes it possible to include within this regional framework such physically detached and even ethnically different areas in the NWF as Chitral, Kohistan, and north Hazara.

If the NWF is interpreted on a general geomorphological as well as hydrological basis it becomes possible to make a twofold division, with the Safed Koh and its eastern extensions (lying roughly along the 34-degree parallel acting as the intermediate boundary: see Fig. 1). Containing for the most part the right bank catchment area of the Indus, the northern zone extends from the rugged and partly glaciated mountain ranges of the Hindu Kush down to the northern edge of the Peshawar Basin. Although Tertiary formations, such as are found further south, are very much in evidence here, this section is much more dominated by old resistant metamorphics and igneous rocks probably of Paleozoic origin.[3] The southern section, on the other hand, is built up almost exclusively of non-metamorphic soft sedimentary rocks with all stages of the Tertiary era very well developed. The fact that these two zones differ so markedly with respect to their durability, i.e. erosion, has produced some dramatic contrasts in their overall appearance. This is certainly understandable in view of their converse rainfall regimes, especially in the case of the dry southern zone which suffers from the sort of devastating effects that a warm seasonal convectional type rainfall implies.

While the rivers of the north, with the exception of certain sections of the Indus, are essentially subsequents, those in the south are mainly consequents, breaking out to reach the Indus by cutting across the main grain of the Wazir hills and Sulaiman mountains. The northern rivers are also much less seasonal in character than their southern counterparts, many of which carry water only after a severe summer thundershower. This, of course, directly influences their respective discharge volumes, which as expected are far greater and more dependable in the north. Further, in contrast to the rivers of the northern zone, where all the important tributaries belong to the single river system of the Kabul, the southern part is divided into a number of independent river basins. Here the Kohat Toi, Kurram, Tank Zam, and the Gomal with its main tributary Zhob are the most important rivers.

The Frontier itself has an extreme length of 408 miles, while its

[3] U.N.O. Report to Government of Pakistan on Right Bank Tributaries of the Indus (Rome, FAO, Part 1, 1957), p. 62.

width varies between 280 miles at its broadest part to something less than 60 miles in Kohat District. Apart from the district of Hazara and parts of Kohistan the entire region is located to the west of the Indus River extending up to the boundary with Afghanistan, which is known historically as the 'Durand Line'.

When first analysing the northern reaches of the Province one gains the impression that it resembles something like an overhanging convex roof, the base of which stretches roughly from a key pass known as Babusar in the east to the equally important Dorah Pass in the west. It is in this part of the NWF that land forms reach their greatest magnitude with elevations averaging better than 16,000 feet and scores of peaks of more than 20,000 feet in evidence, including the mighty Tirich Mir (25,426 ft.) near Chitral City. Yet a no less important feature of this zone is the relatively low base levels of the river valleys and the rather systematic arrangement which characterizes their main lines of drainage. Starting with the south-west-flowing Kunhar River in the east and extending westward in an almost perfect parallel pattern spaced approximately 30 miles apart are the Indus, Swat, Panjkora, and Chitral Rivers in that order.

Forming the top of the 'roof', and thus dividing Chitral from the Wakhan 'corridor' of Afghanistan, is the forbidding Hindu Kush range along with its equally impressive southern extension, the Hindu Raj or Shandur Range; this latter forms the south-east watershed for the valley of the Chitral River.[4] This range presents one of the most formidable land barriers in the world. With its jagged peaks, precipitous slopes and extremely meagre forest cover,[5] it is understandable why it has gained the name of Hindu Kush or Hindu Slayer. This range has its eastern origin somewhere in the vicinity of Nanga Parbat, which itself is considered the north-western end of the central Himalayan system. Starting from here in a westerly direction in the vicinity of Babusar Pass, the range shortly thereafter bends north and soon west, bordering the Wakhan before assuming a S.W.–N.E. alignment. This last direction is the most characteristic strike of the range in Chitral and Afghanistan as well as that of the spurs it throws off in Bajaur, Dir, and the Mohmand country.

Like the fingers on an outstretched hand, minor ranges descend gradually from the wrist-like core of the Hindu Kush system into the administrative areas of Dir, Bajaur, Swat, Kohistan, and Hazara. Even though considered minor in relation to the main chain, they

[4] Lewis, C. G., *Surveys in Swat, Chitral and Neighbouring Territories* (Dehra Dun, Survey of India, 1934), p. 17.

[5] Wright, H. L., 'Forestry Beyond the Indus: The Chitral Forests' (*Indian Forester*, Vol. LXV, No. 6, June 1939), p. 312.

nevertheless achieve heights to upwards of 18,000 feet, with many permanent glaciers evident in the northern portions. Although these spurs give an overall appearance of being nothing more than a tangled mass, it is possible to discern something approaching a south-westerly trend to them. By the time they have reached the Khyber area as the Mohmand hills, the vicinity of the Peshawar Basin as the Malakand Ridge and Buner hills, and the edge of the Indus Basin as the Khanpur hills, these headlands have sunk to an average height of 5,000–6,000 feet. In contrast to the rugged mountains and deep V-shaped valleys of the north, the surface features of this zone are more subdued in character, with the result that rivers like the Swat, Siran and Dor have found it possible to develop fairly extensive flood plains. With a copious water supply at their disposal these open valley areas, intensively farmed as they are, contrast strongly with the terraces cultivated with great effort in the areas further to the north.

There is a sharp drop from these jumbled hills on to the Peshawar plain. This is the first, largest and most productive of a series of basins which proceed in an almost step-like fashion down to the very southern extremities of the region. Starting with the Peshawar Basin one encounters the Kohat and Bannu Basins and the Derajat in that order. Except for the Derajat, which is the name given to the plains area in Dera Ismail Khan District, more properly a part of the Indus Basin, all these valleys are ringed by hills which usually present a relatively steep approach on their northern margins, while offering a gentle and mild southern face. Together these basins and plains areas comprise roughly a quarter of the Frontier's total surface; in terms of just about everything else they completely dominate the scene.

As a contact zone for the two divisions, the Safed Koh range, including such eastern extensions as the Afridi hills, stands out sharply on the Frontier largely as a result of its comparatively high western segment and also because of its rather prominent east-west alignment. Rising to more than 15,000 feet near the Afghan Frontier, this mountain system descends rapidly as it stretches across the entire central part of the NWF to Attock.

Sharing this same east-west alignment to a significant extent, but rapidly veering to a much more southerly strike in their south-western part, are the Kohat hills. Davies believed this to be another area of 'syntaxis' in much the same manner as Wadia considered the 'Punjab Wedge' (Nanga Parbat) to be a pivotal point around which the Himalayan and Hindu Kush systems bent themselves.[6]

[6] Davies, L. M., 'Geographical Changes in North-west India during Late Cretaceous and Early Tertiary Times' (*Proceedings Sixth Pacific Science Congress, 1939*, Vol. II. 1940), pp. 483–501.

North and south Waziristan, though an administratively detached area in the southern segment, should be thought of collectively, in geomorphological terms, as a tangle of bare rocky ridges. Though difficult to discern, these hills rise abruptly by a series of north-south-trending parallel ranges from the Derajat plain and Bannu Basin westward to the watershed which divides the basin of the Indus from that of the Helmand River.[7] Essentially a sterile country, this homeland of the fierce Wazir and Mahsud tribes is roughly the shape of an irregular parallelogram 160 miles in length and some 60 miles in breadth, the longer axis lying approximately between Thal on the Kurram River southwards to the Gomal River. Only occasionally have the main water courses of this area such as the Tochi, Khaisora, and Tank Zam, flowing west to east, managed to produce any significant alluvial flats. For the most part the area, being composed essentially of soft sedimentaries, is cut by narrow gorges so deep that in some cases the sky cannot be seen above. Striking out eastward from the Wazir hills as a well-defined ridge some 3,000 feet high and running to the Indus is the Marwat range, a remnant indicating the former easterly extent of these hills.

Stretching from the Gomal River to the southernmost limits of the province in a north-south parallel course is another basically different mountain system known as the Sulaimans. With predominantly long sharp-backed ridges and jagged saw-like outlines culminating in the 11,000 feet Takht-i-Sulaiman (throne of Solomon), the Sulaimans completely dominate the entire Derajat from which they sharply rise. Such a phalanx would certainly be impassable from the plains if it were not for the action of some consequent streams which have managed somehow to gouge out a narrow gateway in spite of various Tertiary uplifts.

CLIMATE

General Features. The role of the NWF as a transition area with respect to cultures also applies remarkably enough to the realm of climates. The same zone, which can be thought of as dividing the cultures of the Indian sub-continent from those of the Iranian plateau, coincides rather remarkably with a theoretical and approximate frontier (based on winter and summer rainfall averages) between the areas subject to the south-west monsoon and those in which winter precipitation predominates. Thus it is in the NWF that the

[7] General Staff Army Headquarters, *Operations in Waziristan 1919–1920* (Calcutta, Government Printing Office, 1921), p. 1.

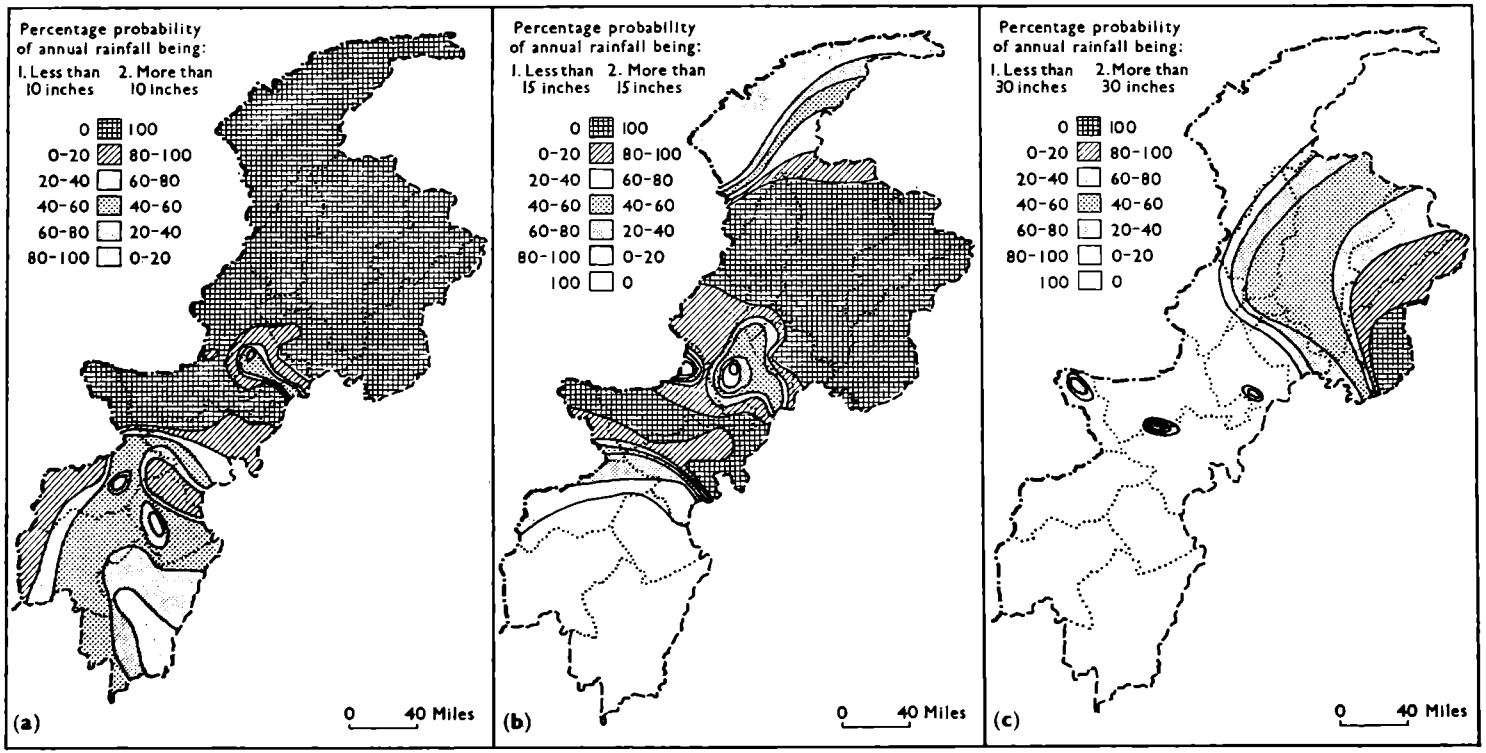

Fig. 3. The N.W. Frontier: *a.* 10″ Annual Rainfall Probability; *b.* 15″; *c.* 30″

south-west monsoon and winter cyclonic depression of western origin vie with each other as the Asian continent's more important giver of effective moisture. Its location as end receiver from both sources, however, undoubtedly increases the uncertainty of each, not only in respect to occurrence, but in amount as well. Characteristic types of continentality that parts of the region share with the sub-continent and that of the higher Iranian plateau to the west further emphasize its intermediate position as a land-bridge between the basic Mediterranean and monsoon types of climate.

Although the NWF shares climatic conditions representative of both regimes, it must always be borne in mind that aridity is certainly the most important factor which gives the region its climatic character. Aridity in this case is not taken to mean simply low rainfall, since, as Cressey[8] points out, Arctic Siberia and sub-tropical Arabia each receive from 4 inches to 8 inches per year, the former supporting poor scrub forest, while the latter becomes lifeless desert. (The 5-inch isohyet does not enter the region.) Rather the combination of relatively low rainfall, falling mainly in heavy convectional type showers, together with an exceptionally high evapotranspiration rate, categorizes it as an essentially arid region. Even areas receiving upwards of 40 inches of precipitation, which can be seen from the 30 inches probability and mean annual rainfall map (*see* Figs. 3c and 4) as covering large tracts in the north-eastern part of the region, still appear on the ground often as being semi-arid. This should be considered a man-made condition, due to acute deforestation and over-grazing in an area dominated by heavy warm-weather convectional showers. This has so seriously affected the speed with which run-off and hence absorption occurs, that what little water was available is invariably lost through the destructive forces of erosion.

The features one usually ascribes to arid areas characteristic of most of south-west Asia are applicable to the NWF with a few notable exceptions. Because of low relative humidity and a continental location there are the usual expected extremes in temperature, both diurnally and annually. The amount of precipitation received, though generally low, is more a result of such local factors as altitude and degree of exposure than of the more general climatic controls. However, in the case of frequency and duration, precipitation conforms to the usual warm arid region pattern of being erratic and uncertain and this also is in direct proportion to the total amount received. In this regard it might be cited that even Peshawar, with an average annual warm season rainfall of 6.32 inches, has experienced droughts

[8] Cressey, G. B., 'The Deserts of Asia' (*Journal of Asian Studies*, Vol. XIX, No. 4 (August 1960), p 390.

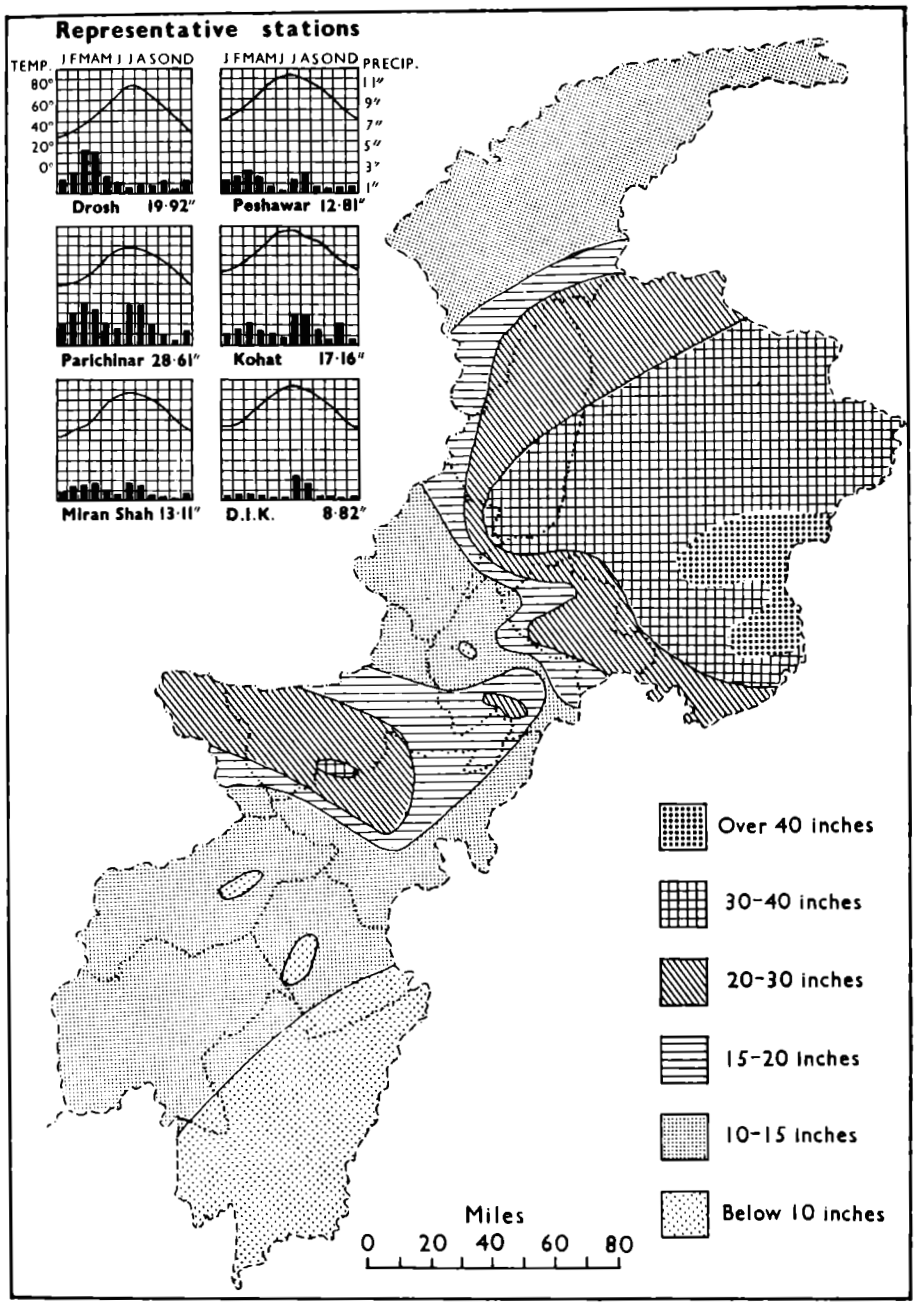

Fig. 4. The N.W. Frontier: Mean Annual Rainfall

as severe as the one in 1877 when no rain fell between April and September.[9]

Continentality, particularly with respect to extremely high warm-season temperatures, is possibly the most outstanding climatic feature of the frontier. Beginning in May large areas, including the foothills west of the Derajat, often experience a mean maximum temperature of nearly 100°F. and above in the shade. In spite of this being a relatively 'dry' type of heat because of low relative humidity, life during the summer months, especially in the blazing day-time hours, nevertheless virtually comes to a standstill with hardly a soul venturing out of doors. Even years of experience with such conditions still necessitates special precautions being taken against the intense glare of the sun on any journeys across open country during this season. Because of such extremes the plains areas of D.I.K. district might easily be designated as one of the warmest arid zone regions in all of Asia. On the other hand, sub-freezing temperatures are not uncommon in the winter months even in the southern extremities of the region—particularly after the passage of a rather large cyclonic disturbance when cold air from the highlands of Afghanistan moves in after the warm front has passed. These winter conditions, arising as they do in a region precariously short of firewood and even dung fuel, serve to emphasize the extremes of frontier life.

It is of interest, with respect to temperature conditions on the Frontier, that it was the warm rather than the cool season which was the dominant factor in influencing house design. Early builders were faced with a choice of acknowledging which season was the more uncomfortable. It is evident from the height of the ceilings and the thickness of the walls that it was the hot season that was uppermost in their minds. Although this makes life comfortable indoors during the hot season, it tends to drive people out of doors when there is sunlight in the winter, for it is only one's immediate presence next to a fire which will ensure any degree of warmth. One often finds that it is this fact alone which seems to make low temperatures feel lower than they are in view of the fact that January temperatures in most of the plains areas of the Frontier hardly dip below 40°F.

Climatic Specialization. Vegetation in the NWF achieves the expected sort of specialization necessary in an arid environment, and thus one finds xerophytic types predominating, though altitude and exposure affect the scene especially with regard to secondary and forest growth. In general, however, it is the common 'bunch grass' with its shallow

[9] Blandford, Henry F., *Climates and Weather of India, Ceylon, Burmah* (London, Macmillan and Co., 1889), p. 130.

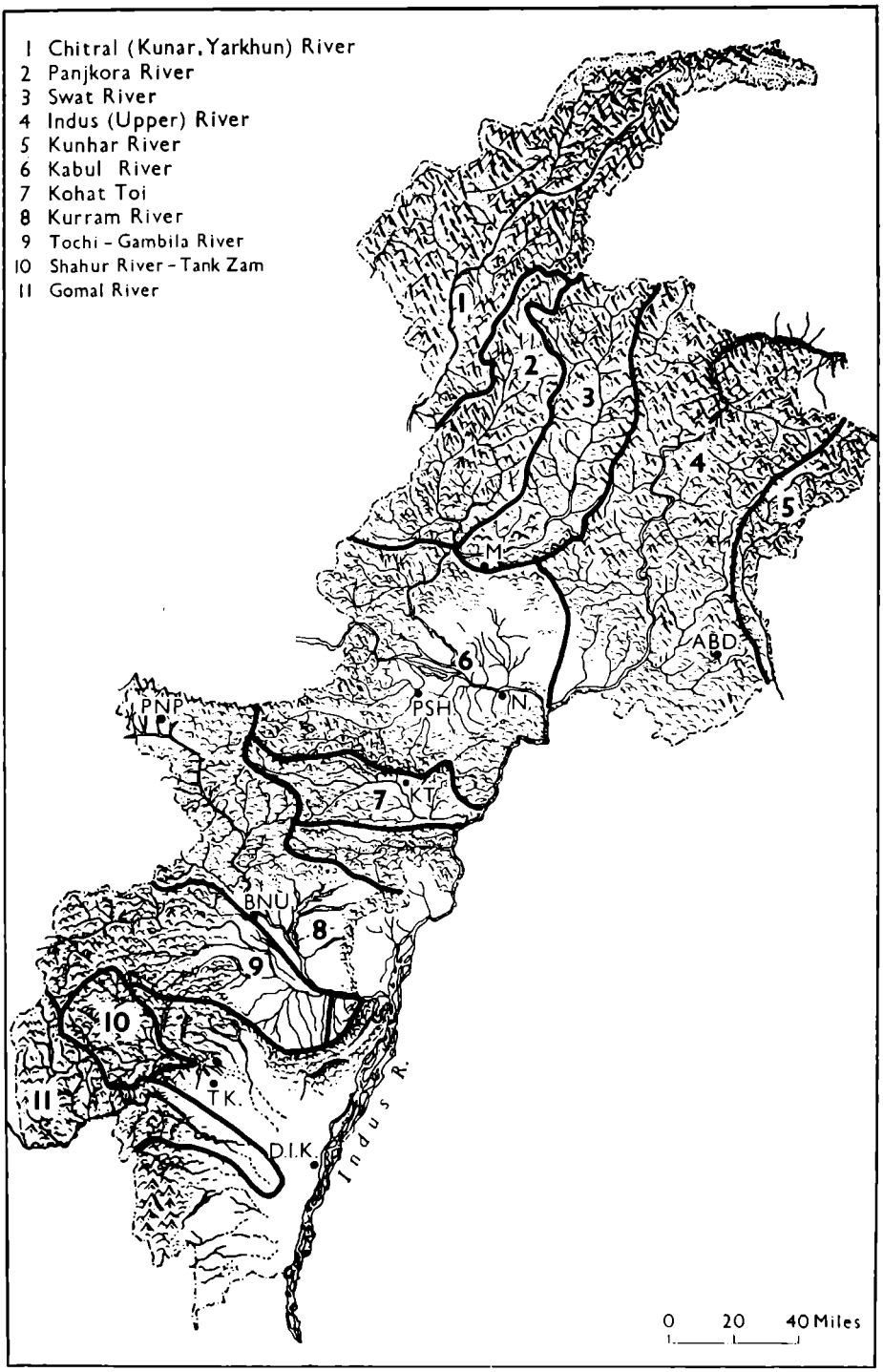

Fig. 5. The N.W. Frontier: Drainage and main River Systems

root systems capable of utilizing scant rainfalls and the shiny, thick-skinned evaporation-protected species such as the commercially useful 'mazri' or 'dwarf palm' that truly mark the region.

Another sort of adaptation based on climatic adjustment can also be related to the region's drainage pattern. This is basically a result of the rather strong effects of erosion coupled with the heavy demands made upon the highland rivers as they debouch upon the hot lowland plains. These rivers, swiftly flowing and swollen as they might be in the mountain areas, are so seriously sapped of their strength upon their entry to the plains that an unusually large proportion of their huge debris load is dropped shortly thereafter. This undoubtedly accounts for topographic features which one normally associates with 'Frontier' landforms, i.e. alluvial fans of every conceivable size, waste-filled desert basins and heavily eroded hills largely in the 'bad-lands' category. In some areas like D.I.K. where temperatures are extremely high the year round and the demands of irrigation are great, most drainage never even succeeds in reaching the Indus, the region's only outlet to the sea.

As a direct response to the combined and interacting effects of relatively poor climatic conditions and extremely bad land management the Frontier has not only practically lost its entire vegetation cover, but is on the verge of a large-scale soil salinity problem. Soil management on the NWF is also complicated by the limited availability of nitrogen and the reduced level on which chemical leaching and eluviation operate. In the more hilly areas a sparse vegetation cover also means a faster run-off which has a further effect of lessening any chances of soil profile development. Such conditions have also increased the presence of loose sand over large areas, which further restricts water availability and hence soil development by so increasing permeability as to render it useless for surface or near-surface use.

Climatic Controls. Any sort of climatic analysis of the NWF necessarily involves an explanation of the two principal sources of precipitation, i.e. the warm season or monsoonal type and the cool season precipitation largely derived from passing winter cyclones. Of the two, winter precipitation is the more important, since it not only provides moisture during the main growing season, but also accounts for the vital warm-season irrigation water largely derived from winter snowfalls in mountain catchment areas.

1. *Warm Season Precipitation.* It has been thought for many years that the monsoon, as it is known on the sub-continent, was essentially a gigantic convectional system, which worked according to a mechanism whereby temperature influencing pressure and hence

wind direction brought on rainfall.[10] However, with such war-time inventions as the radio sonde balloon and radar to aid them, scientists have discovered that these winds are far more complex than originally supposed. The German climatologist Flohn has for some years pioneered the idea that the thermal low of northern India and Pakistan, along with the resulting monsoons, was actually a great northward displacement of the inter-tropical front, which in itself is part of the great planetary wind system. In this manner he accounts for the unusually high pre-monsoon temperatures that regions like the NWF exhibit.[11] Although this is generally in line with the thinking of Kendrew and others, Flohn differs somewhat by suggesting that the I.T.F. should really be thought of as a belt with northern (N.I.T.F.) and southern (S.I.T.F.) sections, and that the south-west monsoon is actually only a part of a general western equatorial wind circulation located between these extremities.[12]

The great variation of monsoon disturbances in regard to both position and intensity, even on a daily basis, reinforces the modern concept that their origins are more of a frontal nature. They appear to have developed as it were along an oscillating I.T.F. rather than by simple thermal convection, as was originally thought. This argument is easily supportable when one considers that the I.T.F. is actually a zone of separation between totally unlike air of northern and southern hemisphere origin.[13]

On the average, three or four of these summer monsoon depressions per month move out from their source area over the head of the Bay of Bengal and advance in the trough of the I.T.F. towards the NWF. Spate seems to feel in his monumental regional work on the subcontinent that these depressions owe their development to their interaction along local fronts of three distinct types of air masses: (a) old monsoon air, (b) fresh monsoon air and (c) old continental air from N.W. India, with the whole condition being intensified by the massive Himalayan wall which not only restricts but influences the entire system up to six kilometres.[14] The Pakistan Weather Bureau at Lahore believes that the trajectory of these depressions is directly influenced

[10] Trewartha, G., *Introduction to Climatology* (New York, McGraw-Hill, 1954), p. 32.

[11] Flohn, H., 'Passatzirkulation und Äquatorial Westwindzone' (*Arch. Meteol. Geophys. U Bioklimatol,* Series B., Vol. 3, 1951), pp. 8–14.

[12] *Ibid.*

[13] Spate, O. H. K., *India and Pakistan* (London, Methuen & Co., 1957), pp. 49–50.

[14] Sawyer, J. S., 'Structure of the I.T.F. over N.W. India during the S.W. Monsoon' (*Quart. Journal of the Roy. Met. Society,* Vol. 73, 1947), p. 346.

by what it terms secondary fronts of large western disturbances operating far to the north.

Considering the depressional character of these monsoon storms one realizes then why, in areas as far removed from the source region as the NWF, there are often long periods during the height of the monsoons when the weather is bright and settled. Emphasizing this 'break' in the monsoons, and as a result often bringing disastrous consequences because of the crop failures it invokes, is the occasional presence of a low pressure area over Tibet, which according to Ramanathan can siphon off the rain-bearing easterly winds from these depressions as they move up the Ganges valley.[15] Although they are significant in the warm season, they are not solely responsible for the precipitation received. Another significant source can be attributed to local convection, which is particularly important in such isolated upland areas as Cherat near Peshawar.

Had it only been the factor of distance involved, the NWF along with most other areas of West Pakistan would receive a considerably larger amount of summer precipitation. The answer lies in the presence of hot dry continental air originating as far away as the subtropical anticyclone of the North Atlantic. In its passage over Eurasia and finally the hot Iranian plateau where its condition is, if anything, intensified, it descends on to the Indus plains where it collides head on with air from the south-west monsoon—forming as it does the westernmost segment of the I.T.F. In the interaction of these two air masses the dry continental air is forced to ride out over the denser monsoonal air from a point near sea level in the longitudinal location of Karachi to a maximum distance of about 500 miles eastwards, where in the vicinity of Delhi it reaches an altitude of 10,000 feet.[16] This condition largely accounts for the inability of monsoonal currents, particularly in the southern portions of the NWF, to give even modest amounts of precipitation, because before condensation takes place in any convectional or frontal ascension the rising air is checked almost as the way a lid on a jar would by the dry continental winds running out aloft.[17]

2. *Cool Season Precipitation.* In analysing cool season precipitation in the NWF mention should be made of what was formerly designated the 'winter monsoon'. Since it was established in the discussion on warm season precipitation that the northward displacement of the

[15] Ramanathan. K. R., *Monsoons of the World* (Symposium held at Met. Office, New Delhi, Feb. 1958, Hind Union Press, New Delhi, 1960), p. 64.

[16] Kendrew, W. G., *The Climates of the Continents* (Oxford University Press, 1953), pp. 174–6.

[17] Simpson, G. C., 'The S.W. Monsoon' (*Quart. Journ. Roy. Met. Soc.*, XLVII (1921)), pp. 157–9.

I.T.F. was essentially a shift in the planetary wind system, it follows that the winter season brings a re-establishment of the trade wind system normal for those latitudes as the I.T.F. retreats below the equator. Contrary to what has been written by such writers as Chatterjee and others before him, the 'winter monsoon' is not thought to be part of the huge central Asian anticyclone, but rather a detached sub-tropical and anticyclonic cell, which provides only the slightest influence as evidenced by the normally calm conditions that prevail throughout the cool season.[18]

Undoubtedly, the cool season cyclonic storms are the single most important climatic factor affecting the people of the frontier. Upon the reliability of their occurrence and performance rests almost the entire welfare and prosperity of the Frontier. Their tardiness by a matter of a few days can spell disaster for the indispensable rabi crop, and this in an area already precariously short on food grains can, and does, cause considerable political and social unrest on the Frontier.

The origin of these essentially shallow depressions can be thought of as a southern extension of the global belt in which these storms operate, though most writers on the subject regard the Mediterranean Sea as their primary source area. The path they follow in this case is the zone favourable for frontogenesis between the cold anticyclone of Central Asia and the sub-tropical anticyclone on the south. According to official government sources, the average number of depressions entering the region is about 5 per month between December and April.[19]

Figures which were taken from a series of daily weather maps put out by the Pakistan Meteorological Department illustrate quite clearly the mechanics involved in one of these eastward moving depressions. It should be noted from the isobars that the farther east the disturbance moves the shallower it becomes. This, it may be assumed, is a result of the influence wielded by the anticyclone cell persisting over the sub-continent at this time. Another characteristic feature of these storms can be observed in Fig. 6 which shows the formation of a secondary disturbance. This condition was brought on as a result of cool air behind the primary front acting frontally with warmer and moister air just south of the Makran coast and in the Persian Gulf. These 'secondaries' are actually small low pressure systems appearing in the circulation of a parent depression and initially moving around the parent rather like a satellite round a planet.[20]

[18] Chatterjee, S. B., 'Precipitation Characteristics' (*Geog. Review of India*, Vol. XIII, Sept. 1951, No. 3, p. 4).

[19] Kendrew, *op. cit.*, pp. 157–8.

[20] Air Ministry, *Elementary Met. for Air Crews* (Air Ministry, Dec. 1954), p. 115.

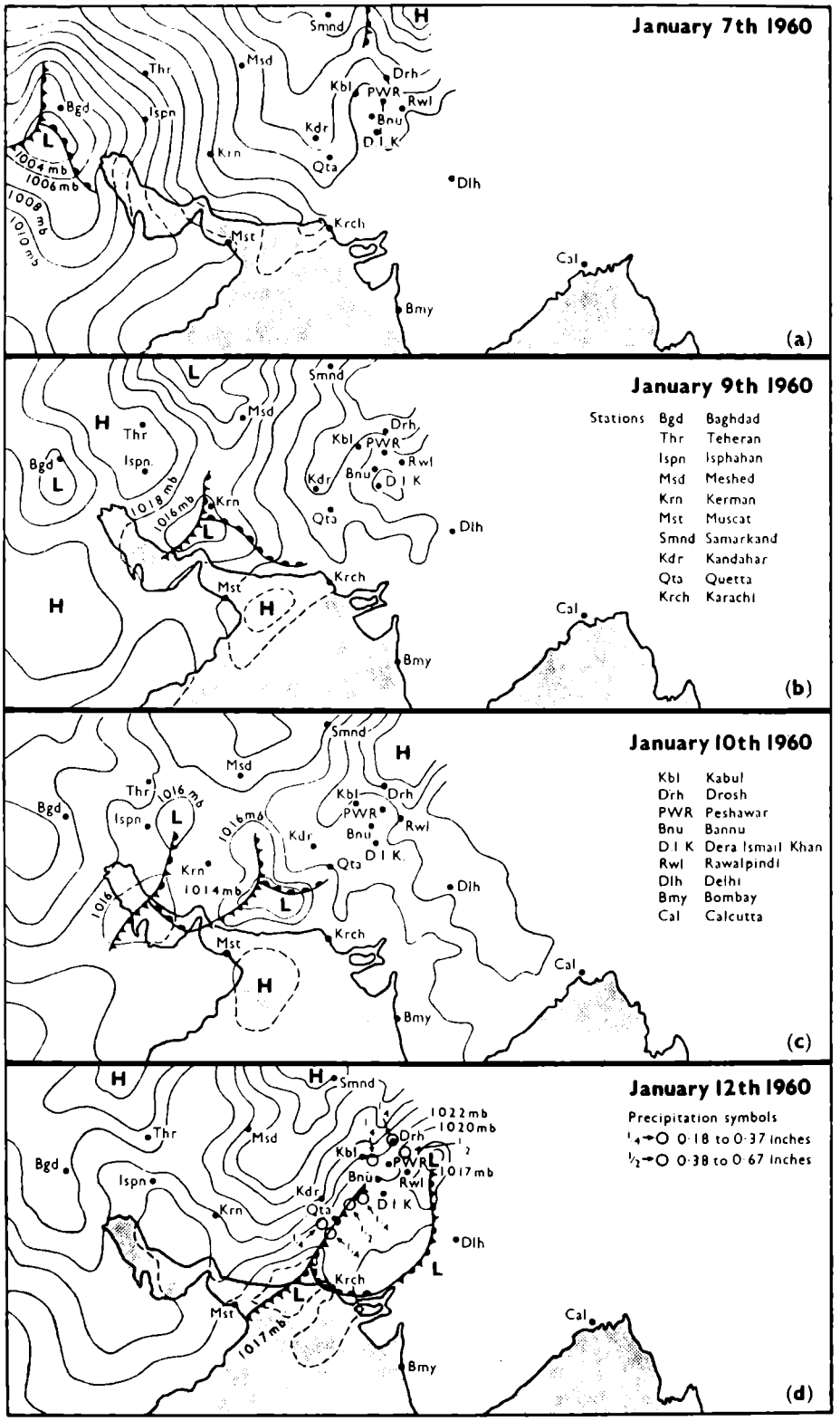

Fig. 6. The N.W. Frontier: A Typical Winter Cyclonic Sequence (from Pakistan Met. Daily Weather Maps)

Forming as they do on the cold front of the parent storm, these secondaries frequently cause more rain, as is the case shown in the example (Fig. 6), even though they actually may cover a smaller area than the primary disturbance. They are particularly effective between May and December when the main cyclonic tracks have shifted north of the Karakoram ranges. In this instance if the main storm centre is large enough in diameter the cool sector winds often interact frontally with warmer air over the Frontier, thus bringing on the early fall precipitation so vitally needed during the sowing period. They can be equally as damaging, however, in the late spring, especially when they come into contact with the rapidly warming land. In this instance the result often takes the form of violently destructive tornadoes, dust and hail storms in the wake of their passage.

Climatic Regions. In selecting the criteria upon which a regional climatic map of the NWF was to be formulated, emphasis was given at the outset to precipitation as the main delimiting factor. This was a distinct departure from the work done by Professor Kazi Ahmad of the Punjab University in Lahore. Temperatures based essentially on the height of landforms, and precipitation, were treated by him as being of equal importance in his climatological analysis of the whole of West Pakistan.[21]

In an essentially arid area like the NWF it was decided that a map of greater practical value could be drawn if initial preference was given to divisions based solely on precipitation. Therefore the first order of climatic regions was demarcated on the basis of such groupings as Arid, Semi-Arid, Sub-Humid, and Humid (see Fig. 7). This was accomplished by interpreting overlays of the 10 inches, 15 inches and 30 inches annual rainfall probability maps. A further refinement of these four main categories was made according to whether or not there was a specific maximum rainfall period in the year. This was delineated on the map of climatic regions under the following three headings: (1) The smaller letter 'a' denoting no distinct seasonal occurrence, (2) 'b' meaning that the rainfall comes mainly in the warm season, and (3) 'c' a major proportion of the precipitation coming in the winter.

In order not to omit the element of temperature, particularly with regard to altitudinal location, an effort was made to incorporate a method used by Peveril Meigs in his work on Arid Zone Hydrology for UNESCO in 1953, in which a coded number system was employed to register the mean temperatures of the coolest and warmest

[21] Ahmad, K. S., 'Climatic Regions of W. Pakistan' (*Pak. Geog. Review*, Vol. VI, No. 1, 1951), pp. 1–35.

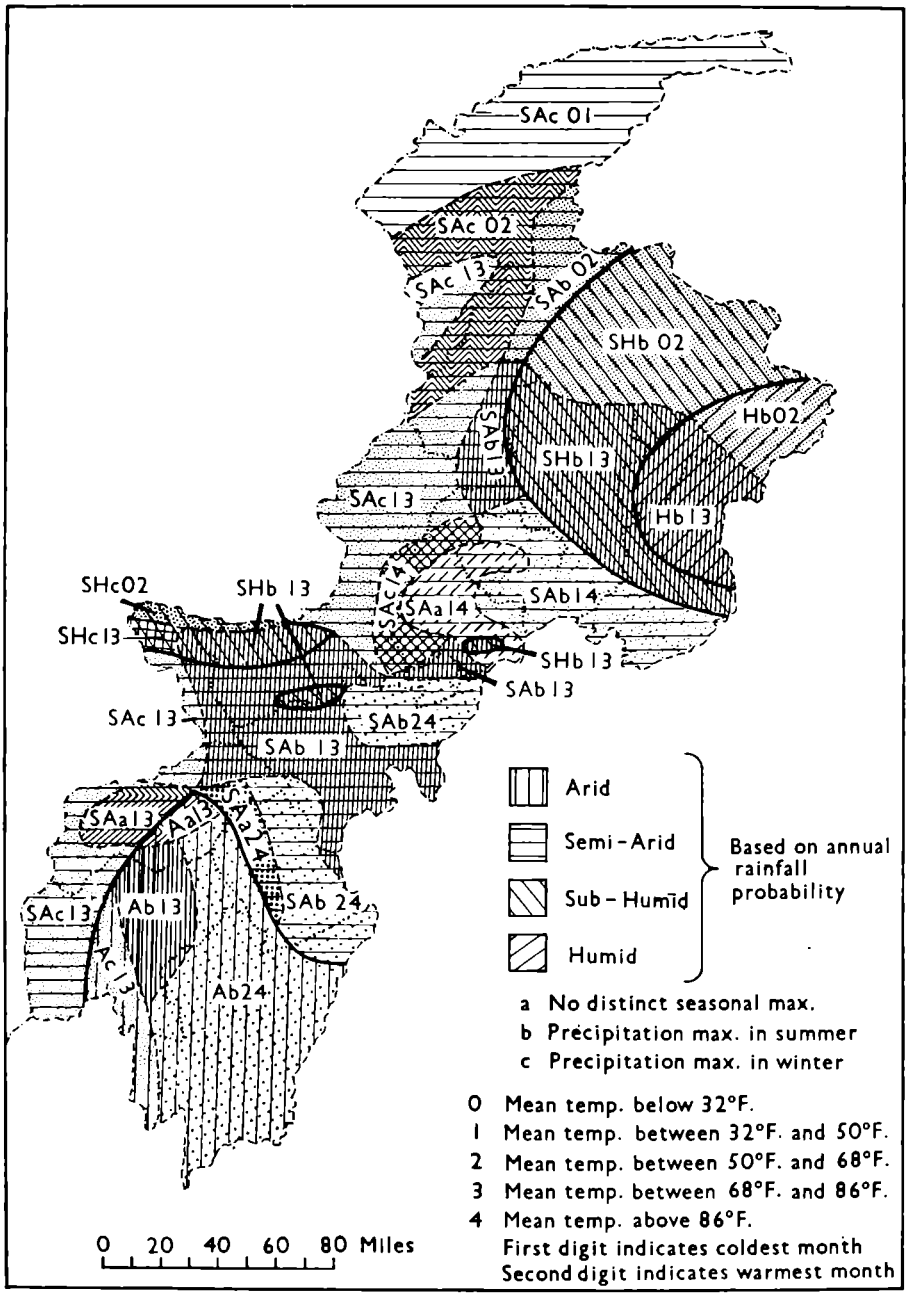

Fig. 7. The N.W. Frontier: Climatic Regions

months.[22] The inclusion of this system was considered important in view of the extreme annual temperature conditions experienced on the Frontier. This factor becomes specially meaningful, not only in terms of sensible temperatures experienced by the populace, but also from the standpoint of the influence it has on vegetation.

The coded number system adapted from Meigs has five divisions based on mean monthly temperatures. At one end of the scale a numerical value of O was given to an area in which the mean temperature of the coldest month was below the freezing point, while at the other extreme the number four was used to indicate a mean monthly temperature above 86°F. In order to avoid any confusion in the mountainous areas of the province where winter and summer extremes are not particularly significant, the first digit is taken to stand for the coldest month and the second for the warmest.

When the three elements of annual rainfall, seasonal variations of rainfall, and seasonal temperatures were considered together, it became possible to delineate a number of separate climatic regions. At first glance it might appear that too large a number of regions resulted, but, if anything, this simply proves that even a basically semi-arid area can be quite complicated locally. What was found important, however, once these areal climatic differentiations became evident, was the manner in which they were depicted cartographically, particularly in the way the seasonal aspects of precipitation could be combined with temperature conditions. This latter relationship, it was felt, was the most significant and hence was even carried across the major climatic divisions, i.e. Humid, Arid, etc. In order not to detract from the major groupings, a similar sort of stippling pattern was used in those divisions having the same last three coded designations. Thus one finds in Fig 7 that the region designated as Ab24 (in the vicinity of Dera Ismail Khan) has the same kind of stippling as the adjacent division SAb24, but with a different line pattern. This latter pattern, which is based on annual rainfall, was used in order more clearly to delineate the first order of climatic regions.

It should be pointed out that since the only climatic data available for large parts of the north and north-eastern sections of the region are merely descriptions given by travellers and explorers, a great deal of interpretation was necessary in mapping these particular sections. This is a result of an almost total lack of climatic stations in these regions. A considerable amount of interpretation was also necessary in dealing with those sub-divisions based on temperature, since data of this nature proved far less complete than those for precipitation.

[22] Meigs, P., *World Distribution of Arid and Semi-Arid Homoclimates, Arid Zone Hydrology* (UNESCO 1953), pp. 203–5.

A great deal of stress was put here on personal observations. In addition, a careful analysis of topographic sheets was made in order to estimate the effects of altitude.

Another difficulty encountered in delimiting the climatic regions, especially again in the remote northern regions, arises from the devastating effects of deforestation. Regions like Chitral, Dir, Bajaur and Swat, which could certainly be thought of as being at least sub-humid in nature, have degenerated because of rapid deforestation during the past century to a condition which can only be described as being semi-arid in overall appearance. This state of affairs is thought to exist in regions which otherwise on the basis of annual rainfall and temperature should be thought of as being Sub-Humid. Of course, the destruction of the native stands of timber does not always proceed with the same pace over the entire region so that this small-scale map involves a considerable amount of generalization. Obviously there are many individual areas, such as the 75 mile deodar 'forest belt' along the lower Shandur range, and other more inaccessible regions, such as in northern Kohistan, which are still densely forested. But, given the pace of deforestation, fast as it has been, and an extremely slow growth rate in this particular location, the generalizations made were thought to be important.

II

THE NORTHERN HIMALAYA ZONE

THE Northern Himalaya Zone is in area the largest of the three principal highland regions of the NWF, embracing almost all of the NWF north of the Peshawar Basin. For the purposes of this study, its southernmost limit is defined as being the Khyber Pass–Kabul River area which differentiates it from the Central Highland area on the south-west and the Peshawar Basin on the south-east. Thus defined, the region includes the three Frontier States of Chitral, Dir, and Swat as well as the Mohmand Frontier Agency and the adjacent Malakand Protected Area on the south-west and the Indus-Kohistan and Hazara regions on the south-east. The fact that of all these units only the Hazara region is an 'administered' area gives some idea of the region's relatively primitive state of social and political development.

In the three Frontier states, the Pathans have been able to preserve to a marked degree their traditional patterns of social and political organization. Tribal government under the leadership of Pathan chieftains has persisted with, until recently, little intervention from the central government.

The Hazara region must be differentiated from the rest of the northern Himalaya zone on a variety of grounds. It is physically separated by the Indus River, and this natural barrier together with the historical development of its settlement patterns has tended to make it an obvious transition zone. The site of the easternmost penetration of the Pathan tribes, Hazara's present ethnic composition reflects the meeting of the Punjabi-speaking plainsmen of the east with the Pathan tribesmen of the north-west. The resultant blending of ethnic and cultural patterns is most evident in the fertile Pakhli plain in the vicinity of Mansehra and makes Hazara one of the most significant regions in the entire NWF, for this fusion of the plains culture of the subcontinent with the highland culture of the Himalaya area—a general characteristic of the NWF—is most striking there.

Physically, the northern Himalaya zone is the most formidable and inaccessible of all the areas of the NWF. Its most impressive features are the towering Hindu Kush range which merges into Afghanistan's Wakhan or 'roof of the world corridor'. The highest elevations in the NWF are found in this area. Lesser ranges extend

southward from the Hindu Kush and divide several river valleys formed by the Kunhar, Indus, Swat, Panjkora, and Chitral Rivers. These spurs, which sometimes reach elevations of 18,000 feet in the northern section of the zone, finally merge into much lesser ranges before falling sharply into the Peshawar Basin.

Hindu Kush Region. The first physiographic region, as outlined in Fig 2, consists almost entirely of the great Hindu Kush mountain system. This magnificent and rugged chain sweeps for 200 miles across the northern extremities of Chitral District. Running west and south, separating the valleys which drain into the Indus from the headwaters of the Oxus River, the main axis, including its highest peak Istora Nal (24,171 ft.), is considered to terminate in Chitral when it reaches the Dorah Pass. Here the range departs from the Chitral-Afghan Frontier and crosses Afghanistan in a general westerly direction. Though decreasing in elevation after it cuts into Afghanistan, the barren and bleak Hindu Kush, along with the 'panhandle' piece of Afghan territory with which it marches in the north, known as the Wakhan 'corridor' (in conjunction with contiguous areas it is also called the 'Pamir Knot'), presents in Chitral an impregnable frontier zone. This region is often popularly referred to as the 'roof of the world', a testimony to its grandeur. Its altitude is known to average more than 16,000 feet.

There are a number of important offshoots of the Hindu Kush. The main one, Arkari Mastuj, can be thought of as three confused minor ranges radiating from the region's highest peak, the lofty Tirich Mir (25,500 ft.). Another, Ankari Lutkuh, is comparatively short, but relatively well known because it commands the main means of access into Afghanistan through the Dorah Pass; while the Kafiristan range, gradually diminishing in altitude southward, forms the western border between Chitral and the remote Afghan districts of Badakshan and Nuristan.[1]

One of the most striking physical phenomena in the region lies at the eastern extremity of this range: the Chiantar Glacier, which is 20 to 25 miles long and 3 miles wide.[2] This immense sheet of ice, purported to be one of the longest in the world outside the arctic regions, gives rise to the Yarkhun (Chitral) River, which at its head leads gradually to a significant drainage parting not only with the

[1] O'Grady, Major H. de C., 'Chitral: An Outpost on the NWF of India' (*The Army Review*, Jan. 1914), p. 122.

[2] Schomburg, R. F. C., 'The Yarkhun Valley of Upper Chitral' (*Scottish Geographical Magazine*, Vol. 50, 1934), p. 210.

narrow valley of the Oxus in the Wakhan immediately to the west, but also with those waters draining to Gilgit Agency in the east.

In contrast to the easy access between the Oxus and Yarkhun River valleys at the headwaters of these two systems, communication between them further downstream becomes progressively more difficult. In view of former international routes of trade to the Wakhan, Asiatic Russia, Sinkiang and beyond, it is worth noting that even the three main passes used are considered negotiable only under the most favourable circumstances. Of the three, the most prominent is the Baroghil Pass which lies approximately 150 miles north-east of Chitral city. Though the pass itself (altitude 12,500 ft.) is comparatively easy, standing at only 800 to 1,000 feet above the Chitral and Ab-i-Wakhan valley floors, the approaches to it are rather difficult, particularly in summer, when it is at times inaccessible, as a result of severe flooding from the melting snow. The other two passes, the Kan Kuch Kach (16,600 ft.) and the Khotgaz, like the Baroghil, were frequented by traders from Kashgar and Yarkand before Chinese Turkestan was effectively sealed off by the Chinese Communist régime.

Although an extremely rough and harsh region, this northernmost part of the NWF shares with adjacent areas in Afghanistan and the USSR a characteristic type of terrain known as 'Pamir'. The word (a Wakhi one), means an upland grazing ground, down-like in appearance; but because it occurs at unusually high elevations it offers only the scantiest forage to the area's local nomadic people, the Wakhi. Not only does this region lack a suitable vegetation cover, but except for some protected valley locations it is devoid of trees as well.

Though most of the glaciers in Chitral can be considered as being in a period of retrogression,[3] the entire region has, nevertheless, been considerably influenced by glacial action. Evidence to this effect can be found in the presence of numerous small lakes, dammed by 'old and extensive grass-covered moraines',[4] while indications of glacial scouring and considerable morainic debris are everywhere to be seen.

Shandur (Hindu Raj) Range Region. Dividing the political agencies of Chitral and Gilgit and running roughly in the same south-westerly direction from the headwaters of the Yarkun as its parent range the Hindu Kush, stands the Shandur range, sometimes called also the Mashabar or Hindu Raj range. It may be considered to extend from the Karambar River on the east (Longitude 74°—near the head of the Karkhun valley) to the Lowarai Pass on the west;[5]

[3] Lewis, C. G., 'Surveys in Swat, Chitral and Neighbouring Territories' (*Records of the Survey of India*, Vol. 25), p. 16.
[4] Schomburg, R. F. C., *op. cit.*, pp. 211–12.
[5] Lewis, C. G., *op. cit.*, p. 17.

though some authorities such as Holdich considered that it spread so far south as to include even the Safed Koh.[6]

While the Hindu Kush has always been considered of strategic importance so far as the sub-continent's external affairs were concerned, the Shandur range is thought to have a similar sort of value with respect to the province's internal communications. It might even be thought of as being a second line for external defence because the two passes it commands are the best routes between the lowlands of the sub-continent and the mountain confines of Chitral. Of the two passes the Lowarai provides the main means of contact between Chitral and the outside world. The Shandur, which is the other main pass, affords the main east-west means of access, leading from Chitral into Gilgit Agency and eventually Kashmir, along with a minor pass further north called Darkot Pass.

The Shandur range reaches its greatest heights, which at above 20,000 feet exceed even the Hindu Kush. In view of such heights and the fact that there is perpetual snow above 15,000 feet, there are many glaciers to be found in this part of the range. Both the Panjkora and Swat Rivers derive a considerable part of their headwaters from this section of the Shandur range.

Though considerably more wooded and thus far less formidable in appearance than the austere and jagged Hindu Kush, the Shandur is, nonetheless, a range of considerable magnitude and severity in its own right. Its impressiveness is underlined by the fact that it represents one of the world's sharpest cultural boundaries; it can rightly be considered as a dividing line separating southern from central Asia.

Chitral River Lowlands. In discussing the Chitral River Lowlands it should be recognized that the river itself goes under five different names in its 200-mile course through Chitral. Starting from its origins at the Chiantar Glacier where it is known as the Yarkand River, it changes to the name Mastuj after receiving the waters of the Laspur, a river which drains large sections of the northern face of the Shandur range. Farther downstream when the Lutkoh River, a branch draining the Tirch Mir area, joins it, the main stream becomes the Chitral River, and then on entering Afghanistan it takes on the name of the Kunar. In addition to these, it is also sometimes referred to as the Kashkar River; quite probably because of the widespread Central Asiatic influences in Chitral.

The Chitral River (the most popular of its five names) and its tribu-

[6] T. Holdich, 'Geog. of the NWFP' (*Geog. Journal,* Vol. XVII, No. 5. May 1901), p. 463.

taries make up the state's only complete river system. In addition to the central stream the main side valleys include the Laspur, Turikho-Mulikho, Shishikuh, and Lutkoh. Most of the streams are mountain torrents which are liable to sudden floods, particularly in the summer when they are being fed by the melting snow and also because of occasional convectional storms.

At its widest the Chitral River Plain varies between 1 and 2½ miles, and even this width is generally restricted to areas lying south of the village of Mastuj, which is some 71 miles north-east of Chitral. The last significant cultivated area on the river before it enters Afghanistan in a narrow gorge is the village of Nagar about 10 miles downstream from Drosh. This makes the total extent of the cultivable river lowland areas something roughly over 100 miles. It must be kept in mind, however, that this is by no means a continuous or unbroken stretch of ground; these lowlands are segmented at a number of places by defiles and narrows. Two prominent areas of this type are located at Koragh about 7 miles above the village of Reshun, and at Mashalia some 16–17 miles above Chitral. Younghusband in describing his military exploits in Chitral claims there is no single stretch of plain over 3 to 4 miles in length.

Cultivation in these open areas is usually restricted to tiny fan-shaped cases of soil deposited by mountain streams 'just before they noisily hurl themselves into the main river,' rather than in the rock-strewn Chitral valley itself. It should be mentioned here that alluvial fans on a much larger scale than those used for agriculture are another common physical feature of these lowland areas. Their origins can largely be attributed to temperature and humidity extremes characteristic of the Chitral climate. The agents of weathering have here been particularly effective, causing rock slides on such a scale and with such frequency as to warrant their being considered 'liquid streams of mud and stones'. Valley bottoms often become a succession of these fans, which frequently coalesce so as to form an almost continuous stretch for long distances.

In Chitral the term 'open' or 'plains' area must be interpreted relatively since 'the Chitrali word for "level ground" is applied to any flat place at an angle of less than 45 degrees'. The so-called open areas in this region are in reality gently undulating land which slopes gradually to the river, itself generally entrenched anywhere from 10 feet to 100 feet below the general valley level. The particularly remarkable feature of the Chitral River lowlands is that in their central portions (near Chitral City) they average little more than 5,000 feet in elevation. This fact, considered against the immediate background of the Hindu Kush and Shandur systems, in which more than forty peaks exceed

20,000 feet, exemplifies the extremes which characterize this physiographic region.

Dir-Swat Kohistan and Indus Kohistan. Stretching from the crest of the Shandur range in a south-easterly direction across the Indus River to the head of the Kagan valley in northern Hazara is a continuous mountain mass, approximately 100 miles wide, which collectively is known as Kohistan. The word Kohistan is applied to any person who comes from a remote mountainous area of the province; to non-Pathan people living in this particular area; and it is the name of a particular tongue in the Dardic language group. For ease of description and analysis it was considered advisable to break this rather large area down into two divisions, Dir-Swat Kohistan and Indus Kohistan. This again was done mainly on the basis of local usage and custom, but the division also closely follows the main lines of drainage and to a lesser extent the location of certain language and ethnic groups. An interesting testimony to this region's extremely broken and mountainous terrain is given in the work of the Norwegian anthropologist Dr. Frederik Barth.[7]

Dir-Swat Kohistan is essentially the mountainous catchment area for the Panjkora-Swat River systems. North and west of this region drainage is either into the Chitral River (mostly via the Laspur River) or else to the Gilgit River, while east of the Ushu River (a main tributary of the Swat) there is a drainage parting to the Indus and its tributaries. Between the adjoining and remarkably parallel Panjkora and Swat systems, the water parting of which marks the political boundary between Dir and Swat states, there is easy access through such side valleys as that of the Gabrial and Zhandrai Rivers. On the other hand such passes as the Kach Koni which leads into the Laspur are so infrequently used that recently a British climber and his party, even though using local guides, took three days merely to ascertain where the pass actually was.[8]

Although there is always some water present in the bed of the Panjkora throughout the year, it is subject, like almost every other river in the entire province, to disastrous flooding, largely because of acute deforestation. In this connection it may be noted that a 30-foot rise in a matter of hours is not a rare occurrence. Unlike the Swat River, however, the catchment area of the Panjkora is largely restricted to that of the main stream, with the Gwaldai stream (joining the Panjkora at the village of Patrak) making the only other signifi-

[7] Barth, F., *Indus and Swat Kohistan: An Ethnographic Survey* (Oslo, Forenede Trykkerier, 1956), p. 85.

[8] Tyndale-Biscoe, C. H., *Climbs in Swat Kohistan and Chitral* (London, Royal Geographical Society Library), p. 4.

cant contribution. In the case of the Swat River, however, there are three main tributaries which, taken together, constitute the area known as Swat Kohistan. All of these rivers, i.e. the Ushu, Bahandra, and Gabral, have their sources in a permanently glaciated region of the Shandur Range, which in this location separates Swat State from Chitral and Gilgit.

Indus Kohistan, which begins at a drainage parting no more than 10 miles east of the Ushu River, is completely dominated, as one might expect, by the great Indus River system. Lack of any detailed exploration in this region, however, makes it possible to account accurately for only a few of its many significant tributaries. Of these the Gabrial-Kandia system, which Stein first mapped in 1942, is certainly the most important so far as the country north and west of the Indus is concerned. On the eastern side of the river a certain amount is known about two valleys which are located just north of the Hazara District boundary. Separated by a 16,000 foot north-south trending mountain range, these east-west running valleys are known as the Chicharga and the Nila Naddi respectively.

Although Stein thought of Indus Kohistan as extending only from the Swat River to the Indus,[9] most local geographers and government officials today think of the great mountain mass between the Indus on the west and the Kagan to the south-east as all being part of that same region. Even the official record of British Army expeditions in the area as early as 1884 referred to this region as being cis-Indus Kohistan, 'the name applied to the country to the south and west of Chilas, between the Khagan glen in British territory and the River Indus.'[10] Of the southern limits of the region the only mention that is made by anyone who has done any work in the area comes from Barth, who talks about it as being somewhere near 'where the mountains start receding from its banks (Indus) as it enters Buner.'[11]

In general it can be said that all of Kohistan follows the typical pattern of regions in their youthful stage of physiographic development. This is evident from the region's characteristically steep-sided, V-shaped valleys and fast-rushing streams. The fact that the angle of the slope of the V is controlled by the rate at which the rainfall, local drainage and slip can remove the sides compared with the rate at which the river deepens the bed itself,[12] is extremely significant

[9] Stein, Sir Aurel, 'From Swat to the Gorges of the Indus' (*The Geographical Journal*, Vol. C, No. 2, August 1942), p. 49.

[10] Paget, Lt.-Col. W. H., and Mason, Lt. A. H., *A Record of the Expeditions Against the North-West Frontier Tribes* (London, Whiting and Co., 1884), p. 16.

[11] Barth, *op. cit.*, p. 11.

[12] Gresswell, R. K., *The Physical Geography of Rivers and Valleys* (London, Hulton Educational Publications, 1958), p. 61.

when cognizance is taken of the region's relatively arid condition. Thus, in Kohistan where the main rivers derive their water almost exclusively from the glaciers and are therefore capable of maintaining a fairly consistent flow, deepening is carried on at such a rapid pace that many of the valleys inevitably becomes gorges. In the case of the Indus gorge, it has been argued by some scientists that to some extent its fantastic depth must also be attributed to a certain amount of uplift simultaneous with powerful down-cutting by the river.[13]

Although the altitude is on the average several thousand feet higher in the Indus Kohistan (and hence shows far more evidence of glacial action than in Dir-Swat Kohistan), access to and movement within the entire region can be considered difficult even under the best conditions. Nothing illustrates this more dramatically than the gorge of the Indus River which in Kohistan is reputed to be the deepest valley in the world. Lying more than 10,000 feet below the general level of the immediately adjacent mountains, this incredible trench presents an almost impassable barrier (aside from some precarious rope bridges) over its entire course through Kohistan.

A pattern may also be distinguished throughout Kohistan with regard to vegetation. The mountains in this region are snow and rocky wastes from their crests to about 12,000 feet; below this the hills are covered with forest and grass down to approximately five or six thousand feet; and in the valleys, especially near the Indus, where a certain amount of alluvium has accumulated from tributaries debouching into the Indus, a limited amount of cultivation takes place. The Kohistan forests are almost universally pure deodar,[14] with a limited intermixture of blue pine, spruce, fir and oak.

Lower Swat River Basin. The Swat River is the most important tributary of the Kabul River. It rises in the region of Kalam, where its three principal sources, the Gabral, Bahandra and Ushu Rivers, unite at approximately 6,600 feet above sea level. At first it flows in a southerly direction through a narrow gorge about 24 miles long which ends near the village of Madiyan (Churrai) at 4,300 feet. Dropping nearly 100 feet per mile, the Swat River cuts through these narrows as a raging torrent. However, downstream from Madiyan the Swat valley broadens considerably. Since it is subject to the influence of both monsoon seasonal rainfall and summer snow-melt, the river carries a tremendous amount of sediment during its flood peak. An indica-

[13] Monkhouse, F. J., *Principles of Physical Geography* (London, Univ. of London Press, 1960), p. 123.

[14] Wright, H. L., 'Forestry Beyond the Indus-Forests of Swat Kohistan' (*Indian Forester*, Vol. LXV, No. 7, July 1939), p. 390.

tion of this can be gained from the average seasonal discharges of the Swat River at Kalam: average summer discharge—4,488 cubic feet per second; average winter discharge 932 cusecs.[15] Accordingly, the Swat River is aggrading its bed and, as expected, considerable deposition takes place when the flood subsides and the river's carrying capacity correspondingly diminishes.

During the low-water period the Swat River from below Madiyan all the way down to Kalangi at 1,850 feet (a distance of 70 miles) exhibits all of the properties normally accorded to a braided stream. Spreading out on an average from one to three miles wide, the river flows in a network of ever-changing, branching and reuniting distributaries. The broad riverine flats formed by the Swat River in this section constitute the richest and most populous part of the state. It is also an area in which the most damaging floods occur.

Although the river is intersected by numerous ravine-like 'nullahs' and larger 'Khwars' which bring down the drainage of the ranges immediately flanking the river over its entire course, relatively few maintain significant yearly flows. This is especially true in the southern stretches of the valley which have catchment areas that do not involve regions high enough for permanent glaciation or even significant snowfalls. These tributaries are invariably choked with debris, usually as a result of floods resulting from warm season convectional showers. Their destructive power is considerably heightened by almost complete deforestation over the entire area. Immediately west of Kalangi, however, where the Swat River is joined by the relatively large drainage area that the Panjkora commands, the river turns abruptly south and again enters a narrow gorge. This latter condition persists until it makes its final departure from the northern highlands and debouches on to the plains of the Peshawar Basin (locally known here as Hashtnagar) in the vicinity of Fort Abazai.

Panjkora River Basin. In a permanently glaciated area of the Shandur range north of which the Laspur has its origins, rises the Panjkora River. Although it conforms in its early stages to the usual pattern associated with an aggressive cascading mountain stream, this condition changes rapidly owing to the effects of a gigantic landslip near a place called Nabal mountain (north of Tal village)[16] which has formed a vast natural dam athwart the Panjkora.

The Panjkora receives such important tributaries as the deep-ravined Cowaldai near the large village of Patrak, the vital Lowarai

[15] *U.N.O., Report to Government of Pakistan on Right Bank Tributaries of the Indus* (Rome, F.A.O., Part 1, 1957), p. 36.

[16] *See* section on Dir State.

stream and the Baraul at Chutiatan. At this latter important cross-roads village (3,800 ft.) the river curves to the east making a wide semi-circular bend of about 25 miles. Flowing in a general southerly direction, from this point it surges for a long distance through a narrow gorge shaped largely by quartzites and granites.[17] Gradually the Panjkora valley widens until it reaches a place called Sado where it is joined by the Jandol Khwar (2,170 ft.) which drains the northern reaches of the Mohmand hills immediately to the west. Here the Panjkora again enters a gorge which persists until it meets the Swat River coming in from the east some 15 miles down river.

In analysing the character of the Panjkora a useful comparison can be made with its immediate parallel to the east, the Swat River. Although there is practically no knowledge of hydrological conditions in the Panjkora area it is possible that the Swat River carries far more water. An indication of this was gained from the discharge data of the irrigation channels branching off at and near Munda Qila.[18] Other facts gained from the analysis of these data were: (1) the seasonal distribution of the Panjkora differs greatly from that of the Swat River; (2) the Panjkora is thought to experience more short-termed severe flood peaks, and (3) the annual discharge of the two rivers might vary a good deal.[19] Another significant difference between the two systems is their rate of silting. Aerial photographs taken by a Canadian group as their contribution to a Colombo Plan survey of the Indus Basin showed that the water of the Swat River was quite clear, while that of the Panjkora appeared silty.[20]

As indicated by the Panjkora's gradient there is a fairly rapid increase in altitude northward, from an average of about 5,000–6,000 feet in the country surrounding Sado village to something about 10,000 feet in the vicinity of Patrak. This should not be taken to mean, however, that the ruggedness of the country also correspondingly increases northward, since the effects of rain wash and gully erosion coupled with almost complete deforestation in the southern region have produced far more difficult terrain than altitude alone indicates. The serious extent to which erosion has affected this area can be deduced from the high silt content found in the river.[21]

Mohmand Hills. Like the Buner and Khanpur hills this region

[17] U.N.O., *Report to Government of Pakistan on Right Bank Tributaries of the Indus* (Rome, F.A.O., Part 1, 1957), p. 32.

[18] *Ibid*, p. 35.

[19] *Ibid*, p. 36.

[20] Canadian Colombo Plan Survey. Air photos taken 1952–4.

[21] Miller, W. J., *An Introduction to Physical Geology* (New York, D. Van Nostrand Co., 1949), p. 188.

may be thought of as a transition zone between the towering mountains of the Hindu Kush with their offshoot, the Shandur range, and the lowland basin extensions of the vast plain of northern India. Though the average elevation hardly exceeds 3,500 feet, considerably lower than Buner and Lower Swat, the Mohmand country is still regarded by the Pathans themselves as one of the most formidable natural regions on the entire Frontier.

Largely contained between the Swat and Kabul Rivers the region should be thought of as extending on the south from the Khyber-Afridi ranges roughly in the vicinity of the Khyber Pass and northward to the valley of the Jandol River, southernmost important tributary of the Panjkora system. West and south-west the hills spill over into Afghanistan down to the valleys of the Kunar and Kabul Rivers, except in the north-west where the Sappar range clearly separates them from the basin of the Kunar. It is towards the east, however, that they present their sharpest face. Running parallel with the Frontier in a N.E.–S.W. direction, the grim-looking Mohmand hills present a rather bold outline to the Peshawar Basin in spite of their relatively low average elevation. This is occasioned to a large extent by the fact that the hills cut off very abruptly here without throwing off any detached foothills.

Practically bisecting the entire region is the principal valley, the at the foot of the Illazai hills, only to reappear later in the Danish Kol. Largely of an intermittent nature, this watercourse rises in the Sapper range and after running first in a south-east and then generally easterly direction joins with another large tributary, the Ambahar, just before they drain into the Swat River only 1½ miles farther downstream. Except for a small tributary known as the Pandiali, which empties directly into the Swat, and some small streams which are a part of the Jandol system the entire drainage of the northern half of this region is carried by the combined Danish Kol-Ambahar network. All the rest of the drainage, including the Gandab, Shilman, Salala and the Bira darra, is associated with the Kabul River which dominates the entire southern half of the region.

Outside of the Danish Kol, the Shilman, the Gandab and some small streams in and around the higher western areas near the Sappar range there is no running water found flowing sufficiently near the surface to permit even a limited amount of irrigation. A characteristic feature of the streams in these hills is their disappearance underground especially during the summer season, and their periodic reappearance at the surface.[22] Water even in the Bohai Dag disappears

[22] Enriquez, C. M., *The Pathan Borderland* (Calcutta, Thacker, Spink and Co., 1910), p. 76.

at the foot of the Illazai hills, only to reappear later in the Danish Kol.[23]

For the most part, however, the region is exceedingly wild, the main topographic feature being an endless maze of dry ravines flanked by row on row of rocky hills. Completely devoid of anything but the most drought-resistant species of vegetation, the Mohmand hills have practically all the aspects of a true desert region. Spates, however, are of frequent occurrence.

The Kabul River which rises in north-central Afghanistan provides drainage for a large portion of the eastern section of the country. From Kabul the river flows eastward into the Jalalabad valley; it then turns north for about 10 miles and again abruptly eastward, shortly thereafter entering Pakistan. At this point the low water level is 1,267 feet; where it breaks out on to the plains at Warsak, the site of a huge new dam, the corresponding elevation is 1,118 feet.[24] While flowing through the Mohmand hills the river runs in a gorge roughly 200–300 feet wide, the banks of which rise steeply to several hundred feet above the river level. At intervals along its course in this region the banks are pierced by deep nullahs.

Buner Hills. Averaging from 5,500 to approximately 7,000 feet in altitude the Buner hills comprise a fairly distinct physiographic region roughly 600 square miles in area.[25] Although in the north, in the vicinity of the Shangla Pass, the region merges imperceptibly into the much higher country of Indus Kohistan, it fronts sharply with the lower Swat valley on the west, the Peshawar Basin on the south and the Indus valley on the east. On the whole the Buner hills present an exceedingly barren and dreary aspect. Everywhere the eye is met by dry ravines, between long rows of rocky hills and crags with occasional patches of coarse grass and xerophytic-type shrubs providing the only mantle of vegetation.

The principal drainage system is provided by the Barandu, and its main tributary the Chamla, which are probably also the only perennial streams in the entire region. This system empties into the Indus a few miles above the northern limits of the small princely state, Amb. Even during the summer flood period the water level of this river

[23] Hoghton, Capt. F. A., Operations of the Mohmand Field Force 1897 (Simla, Government of India Central Printing Office, 1899), p. 3.

[24] Ings, J. H., *The Warsak Hydro Electric Project* (An Address before the Engineering Institute of Canada, Winnipeg, May 1960), p. 2.

[25] Menon, M. M., 'Swat: Some Aspects of its Geography' (*Pakistan Geographical Review*, Vol. XII, No. 2, 1957), p. 59.

hardly exceeds three or four feet.[26] As in the case of the lower Swat and Dir this condition can largely be attributed to catchment areas which lack permanent glaciation and to a rainfall regime almost wholly based on periodically heavy conventional showers.

Although the entire drainage of the Buner hills is eastward to the Indus, the area is nevertheless accessible by a number of comparatively easy passes from the west and south. These include the 5,000 feet Karakar Pass, which now carries a newly built all-weather road into Buner from the Lower Swat valley, and the Tangi, Ambela, Malandri and Pirsai all of which emanate from the southern lowland side.

Northern Hazara Highlands. A few miles east of the place where the Kunhar River emerges from Lular Sar lake at the head of the Kagan valley stands the great mountain massif, the 26,660 feet Nanga Parbat.

Morphologically, as well as tectonically, the mountain systems of Hazara are no more than a western extension of the great Himalayan chain. As such they are considerably disturbed and affect geological formations as young as the Tertiary and Pleistocene. It follows that the rivers of this region are, in their upper reaches, swift mountain torrents actively engaged in deepening already deep, narrow, steep-sided valleys, and although the details of the ranges and valleys are the work of differential erosion the formations as a whole are not so much due to denudation as to recent uplift.

The northern Hazara highlands represent a part of a vast crystalline metamorphosed zone composed of a 'great complex of gneissose and schistose rocks interwoven the one with the other, and laid out in parallel flexure waves one behind the other'.[27] This section is, in all probability, a continuation of the great crystalline backbone which comprises the Himalayas. Included within it are the North-east–South-west trending ranges which adjoin either side of the Kunhar and make up the Kagan area, the Black Mountains and those hilly portions roughly north of the Pakhli plain. Between this physiographic region and the adjoining one to the south, the middle Hazara hill-plains land, there is a fault zone.

This region is essentially co-extensive with the drainage area of the Kunhar River system since this river joins up with the Jhelum just about the point at which it leaves these crystalline highlands. Topping the snowfields of the Kagan in its upper reaches, the Kunhar

[26] Paget, Lt.-Col. W. H., and Mason, Lt. A. H., *A Record of the Expeditions against the NWF Tribes* (London, Whiting and Co., 1884), p. 77.

[27] Middlemiss, C. S., 'The Geology of Hazara' (*Memoirs of the Geological Survey of India*; Vol. XXVI, 1896), p. 47.

swiftly carries a great volume of water the year round down a tortuous 110-mile course before joining the Jhelum river not far from Mazaffarabad. Being mainly engaged in down-cutting, this unusually large mountain torrent is characterized throughout its entire length by a relatively deep gorge and little level land upon its banks.

Elevations average approximately 12,000 to 15,000 feet here. On the east, one main long ridge flanks the right bank of the Kunhar during its entire course. On the west, however, along the southern extremities of Indus Kohistan at Musa-ka-Musalla Peak (13,378 ft.) the main range diverges and sends spurs south-westwards skirting the north end of the Bhogarmang and Konsh valleys and encircling the Agror area. These valleys constitute the upper Siran River system. Draining southward from origins in the area around the Musa-ka-Musalla, the Siran closely parallels the Kunhar in this crystalline zone by a distance hardly exceeding 10 miles. Farther south this same spur forms the backbone of the infamous Black Mountain area (approximately 8,000 ft.), extending into Tanawal as a confused network of hills.

Middle Hazara Hill-Plain Land. Adjoining the crystalline backbone on its southern side is an elongated zone of slate. Of vast thickness, these non-fossiliferous rocks are known to continue unbroken to the Indus, where at Attock they outcrop prominently enough to warrant their most common name, 'Attock Slates'. This slate zone is roughly contiguous with the Middle Hazara hill-plain land and, like the other two natural regions, lies parallel to the general strike of the country (North-west–South-east).

Although largely a hill tract 7,000 to 8,000 feet in elevation, this region is dominated by the presence of three semi-continuous plains. The first of these is the badly dissected Pakhli plain (11 by 10 miles) located near the city of Mansehra at a point where the Ichar joins the Siran River. Like the other two plains, the Siran has cut down into the slate zone here and deposited alluvium and gravel to a depth often exceeding 300 feet.[28]

To the south, standing 1,000 feet higher than the 3,000 feet Pakhli plain and separated from it by a low barrier of hills, is the Rash plain. On its northern margins, which are still too broken to permit irrigation, the plain is known as the Mangal tract. The main part of the plain, which appears to be the basin of a former lake, is roughly 4 by 4 miles, with the capital of the district, Abbottabad, situated on its southern rim.

[28] Middlemiss, C. S., 'The Geology of Hazara' (*Memoirs of the Geological Survey of India*, Vol. XXVI, 1896), p. 44.

After crossing the Sirban, a narrow but sharp ridge, there is a considerable drop to the valley of the Dor River. Originating about 25 miles to the east of Abbottabad in one of the most rugged parts of the slate zone called Dunga Gali, the Dor River spreads out rapidly to form the district's largest plain, the 12 miles broad and 30 miles long Haripur plain.

Since its catchment area is relatively small and contains no permanent glaciers the Dor contains much less water than those rivers originating further north. Its bed is about half a mile wide and is entrenched anywhere from 100 to 300 feet below the level of its alluvial plain. About 5 miles from Tarbela it joins the Siran near the north-eastern end of the Gandgar range. In this area the country is barren and stony and is cut by ravines and nullahs.

Similar to the hills of the Tanawal of which they are a lower extension, the Badhnak Gandgar ranges are congeries of low hills 3,000 to 4,000 feet high flanking the Indus River. Containing little level land, these hills are cut by deep nullahs and ravines carrying little water except in times of heavy rain. Between these hills and the Indus is a mile-wide productive riverine strip called Kulai. Level land of this sort also exists around Tarbela to the south of the point where the Siran-Dor drains into the Indus.

Khanpur Hills. This region comprises the low hills and sub-montane tract that are drained, with the exception of a small area, by the Haro River or its tributaries. The Khanpur hills essentially are a transition zone between the Himalayan system to the north and the vast lowland plains of the Punjab which lie immediately to their south.

On the whole the region is characterized by moderately steep hills of 2,000–3,000 feet in elevation with a few prominent ridges achieving heights in excess of 4,000 feet. But because most of this entire southern zone is composed almost exclusively of nummulitic limestone, chemical action has been instrumental in weathering the surface of rock so that it is exceedingly rough and channelled with hollows and caves.[29] The fact that chemical action also causes the major component of the rock to be washed away in solution means that only very small quantities of soil can be produced.

Rising in the southern end of the Dunga Gali range the Haro River takes the normal North-east–South-west course through the Khanpur hills. Where it breaks out on to the plains (near Taxila) before entering Attock tahsil it forms the small but fertile Panjkatha

[29] Chand, P. M., *Revised Working Plan for the Forests of the Khanpur Range* (Peshawar, Government Printing and Stationery office, N.W.F.P., 1926), p. 3.

plain. Even its principal branches, i.e. the Dhund and the Karral Harros, contain a certain amount of water in them all the year round, whereas in the rainy season they all become raging torrents.

CHITRAL

General Setting. Bounded on the north and west by Afghan provinces of Wakhan, Badakshan and Nuristan respectively, on the south by Dir and Swat states and on the east by Gilgit Agency, Chitral is, culturally and physically, the most isolated district of the NWF (Fig. 8). It is surrounded by ranges of mountains often exceeding 20,000 feet and has access to the lowlands for little more than half the year over treacherous mountain passes, of which only the Lowarai pass now carries motorized traffic. Although it might be more realistic from a physical and cultural point of view to classify Chitral in a strictly central Asian context as part of adjoining Gilgit, Badakshan, Nuristan and Wakhan, it nevertheless has to be incorporated in this study. Its inclusion was based on the conviction that both historically and ethnically the state has had far closer ties with the lowlands to the south (including a definite affiliation to 'Pathanism'), in spite of its close proximity to the central Asian highlands. Furthermore, for the purposes of administration, it has always formed an integral part of the NWF regardless of who was in control of the 'settled' territories.

It has an area of about 5,727 square miles (roughly the size of Wales) and a population of just over 100,000. Though Chitral is still theoretically a Princely State, the territory is actually administered by a Pakistan Central Government functionary known as the Additional Political Agent.

'The dominant note of Chitral is bigness combined with desolation; vast silent mountains cloaked in eternal snow, wild glacier-born torrents, cruel precipices, and pastureless hill-sides where the ibex and the markhor find a precarious subsistence. It takes time for the mind to recover from the depression which the stillness and melancholy of the giant land-scape at first compel. All colour is purged away by the sun-glare; and no birds sing.'[30] These words of Sir George Robertson, one of the first British administrators to spend any length of time in Chitral, accurately portray the harshness of the area.

Another illustration of the extremes that characterize Chitral can be noted in the drastic differences in seasonal temperatures. Thus, Chitral City, at 5,000 feet, although lying in a cultivated and relatively tree-shaded valley, experiences summer temperatures exceeding 100

[30] Robertson, G. S., *Chitral: The Story of a Minor Siege* (London: Methuen and Co., 1898), p. 1.

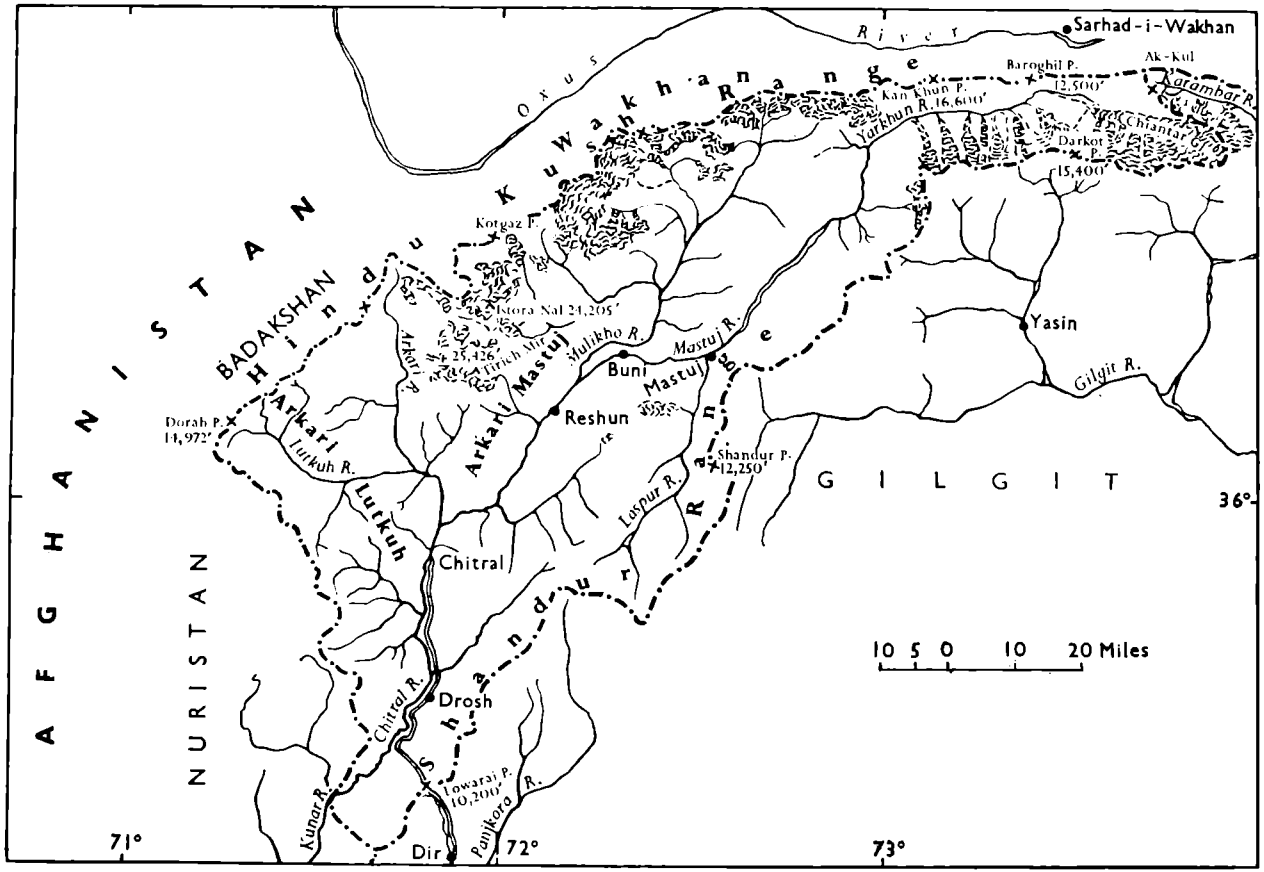

Fig. 8. Chitral

degrees Fahrenheit. On the rest of the bare and open hillsides, where the sun's glare is intensified by the rocks, temperatures are appreciably higher. Temperatures approaching zero degrees are quite common in Chitral City, while in Mastuj, 71 miles to the north-east at 7,800 feet, the thermometer often drops to 5 or 10 below zero. In an area where housing is comparatively primitive, the acquisition of firewood in many areas (particularly in the north-east) is becoming increasingly more difficult, and with a population having an incredibly low standard of living, the physical discomforts associated with such a wide disparity in seasonal temperatures become even more exaggerated.

No less extreme are the landforms located within the state from the mighty Tirich Mir (25,263 ft.) and the 40 or more other 20,000-feet peaks, to the adjacent river valleys more than 10,000 feet below where the main settlements lie.

Inhabitants. Originally a refuge area for early and obscure peoples, as were many other inaccessible places in the north-western Himalayas and Hindu Kush regions, Chitral was eventually opened up to the outside world largely as a result of its position as a cross-roads on the trade routes established between the ancient Mediterranean lands, India, Central Asia and China.

The non-Pathan population of Chitral and its proximity to the other racial splinter groups inhabiting the mountainous areas of Gilgit and Kohistan led some writers like Leitner[31] to include Chitral in an area, to which the name Dardistan has been given. According to Grierson, however, who is usually considered the leading authority on the origins of languages in the sub-continent, the Khowar language of Chitral occupies a somewhat independent position in regard to the other Dardic languages.[32] He goes on to say that 'of all the Dardic languages it is the one most nearly related to the Eranian Chalchah languages spoken north of the Hindu Kush.'[33] In the case of the Kafirs of south-western Chitral, Grierson establishes a close connection between their language and that of Torwali, a Kohistani language spoken in Upper Swat and Indus Kohistan.[34]

Although their racial origins are still a mystery even today, the Chitral people are known to have ties with the races along their borders. Thus, there are strong racial affinities with the people of

[31] Leitner, G. W., 'Legends, Songs and Customs of Dardistan' (*Asiatic Quart. Review*, Vol. V, 1893), p. 167.

[32] According to Grierson the Dardic tongue is a sub-family of the Aryan languages and includes: Khowar, Kafir, and Dard (Kohistani. Kashmiri and Shina).

[33] Grierson, Sir George A., *Linguistic Survey of India*, VIII, pt. ii, pp. 1–3.

[34] Grierson, Sir George A., *Torwali* (London: Royal Asiatic Society, 1929), p. 2

the Wakhan and the Pamirs, and also some admixture of Mongolian blood attributed to Chinese invaders. Grierson considered the Chitralis to have far greater ties with the peoples of the Pamirs and the Oxus than with 'their Dard brethren of Astor and Gurez'.

The Chitralis call their country Kho and their language Khowar. This gives rise to one of the states' basic administrative divisions: Turikho, Mulikho and Ludkho; the other being the splitting of the state into Chitral and Mastuj districts. But because Chitral is an extremely mountainous country, language suffers the fate of all languages in regions which lack good means of circulation, i.e. it presents a multitude of dialects that may vary appreciably even from one valley to another.

Kafir People. Principally inhabiting the rugged south-western valleys of Hambir, Bamburit and Barir are the legendary Kafir people, (the word actually means a non-believer, or someone who has not as yet been converted to Islam), the second most important ethnic group living in Chitral. Although many stories have grown up about these people, particularly about their being descendants of Alexander the Great's forces,[35] it is generally accepted nowadays that they were probably related to an ancient Indo-Arayan group living in Afghanistan who, after refusing to embrace Islam in the tenth century, fled to the hills for refuge.[36] Still, one can easily become impressed with these legends of their Grecian origin in view of their general appearance. Many are indeed like 'handsome Europeans, light in colour, with brown hair and beards'.[37]

In 1896 Kafiristan was annexed by Abdur Rahman Khan of Afghanistan. Its inhabitants were forcibly converted to Islam and the territory was renamed 'Nuristan' or 'The Land of Light'. Today, only in Chitral can one find the idol-worshipping Kafir, since no effort has ever been made on the part of the Chitral or the Pakistan Government to convert them.

The Chitral Kafirs are commonly referred to as being either 'Red' or 'Black'. In the case of the rapidly dwindling numbers of Red Kafirs who emigrated to Chitral in order to escape forceful Afghan conversion, they were allowed to settle in the Bamburit valley. Here in a fairly hospitable setting they subsist on their locally grown hillside crops of maize and millet plus the produce of their vines and fruit trees. In contrast to the Black Kafirs who are the real aborigines of

[35] Stein, A., *Serindia* (Oxford: The Clarendon Press, 1921), pp. 26–27.
[36] Shakur, M. A., *The Red Kafirs* (Curator Peshawar Museum, 1946), p. 4.
[37] Gurdon, B. E. M., 'Early Explorers in Kafiristan' (*The Himalayan Journal*, Vol. VIII, 1936, Oxford, The Clarendon Press), pp. 41–42.

Chitral and who have remained adamant idol-worshippers, the Red Kafirs have largely sought conversion on their own initiative.

History. With the exception of Marco Polo no European visited Chitral until the British appeared at the end of the last century, in response to the rapid expansionist policies of Tsarist Russia into Central Asia. Because of its inaccessibility Chitral had been largely ignored by the British until the Russians, in 1889, successfully linked their European region with Tashkent by the Trans-Caspian railway. Great areas of Central Asia suddenly became part of the largest territorial empires and as such were a serious military threat in British eyes to their possessions on the sub-continent. Russian exploration parties were known to have even probed their way into Hunza in 1889, and into Chitral in 1891. Thus it was that a flurry of excitement about Chitral on the part of Imperial Britain resulted in the Mehtar being forced in 1895 to accept the joint sovereignty of Britain and Kashmir.[38] This made it possible for Britain to garrison a body of troops there and thus avert the danger of 'a body of about 3,000 Cossacks'[39] attacking their territories in India.

Social Structure and Economy. With their northern flank protected by an adequate warning system, and the local population pacified through the paid or subsidized services of a co-operative local ruler, the British found it expedient to have little to do with either the local administration or economic development of Chitral. The result is that Chitral today is one of the poorest and most underdeveloped parts of all West Pakistan. With 18 persons to every square mile, Chitral represents the lowest density of population in the entire NWF; even 50 per cent. lower than that of the arid wastes which make up the greater part of D.I.K., the next most sparsely populated area.[40] This is an extremely low density for a country like Pakistan even if allowance is made for the fact that great areas of the state are occupied by uninhabitable mountains and glaciers.

There are other sources of concern in present-day Chitral: only two per cent. of the state's population is literate; such dispensaries as there are, according to the Additional Political Agent's office, 'have neither stocks of medicines nor a complete staff of Doctors.'[41] There are indications that conditions have actually been deteriorating—during the past three years about 20 to 30 thousand maunds (approximately

[38] Barton, Sir W., *India's NWF* (London, John Murray, 1939), p. 29.

[39] Davies, C. Collin, *The NWF 1890–1908*, (Cambridge: University Press, 1932), p. 88.

[40] 1951 Census of West Pakistan.

[41] Information from Additional Political Agent's office (Chitral).

25 pounds = 1 maund) per year of food grains have had to be imported into Chitral from Central Government stocks—in an area that until just recently had something of a grain surplus.

Exports, too, reflect the seriousness of the state's trade balance. An estimated 80 per cent. of total exports consist of a locally grown narcotic drug called 'Chars'. The Pakistan Government forbids its sale in the 'settled areas', and consequently most of it is being smuggled either into the tribal territories or into Afghanistan, thus eluding effective government control in terms of revenue as well as the extent of the area given over to its growth. Most of the rest of the state's exports centre on the Chitrali cottage industries, which produce articles of clothing from their well-known 'Patti' cloth; with 'middlemen' taking undue advantage of the local producers, however, the profits from their sale rarely reach the individual peasant. There is also a small mining industry in the state based mostly on barely profitable deposits of arsenic, lead and antimony.

Many outsiders (including responsible officials from the Central Government) have forecast great benefits for Chitral if its supposedly huge forest resources were properly exploited. The fact of the matter is, however, that such vast reserves do not exist. Even the existing stands of timber are difficult to extract in any commercial sense because of the region's limited means of transport with greater West Pakistan. From a climatic point of view, the extent of Chitral's forest reserve is, in any case, considerably limited, for the Deodar, 'Indian Cedar' (the most common and important species from a commercial standpoint), reaches its northernmost limit in the vicinity of the Chitral River. Forests in varying degrees of importance are found in all the side valleys on both banks of this river from the Afghan Frontier down to about Chitral City itself. Above that point the Deodar disappears. Thus any serious timber operations are largely restricted to a semi-continuous belt about 75 miles long between approximately 6,200 feet and 10,500 feet.[42]

Another important factor is that the Deodar, as well as the other useful species, are essentially dry zone types because of the region's low annual rainfall. Since Chitral receives only 13 inches annually, of which more than 5 inches falls during the winter months, the quality of the timber suffers accordingly; in the case of the Deodar the timber is slow growing (a tree with an 18 inch girth requires 125 years to reach full height),[43] of poor quality and extremely susceptible to cracks. It is also doubtful, in view of the limited girth of such trees, whether

[42] Wright, H. L., 'Forestry Beyond the Indus: The Chitral Forests' (*Indian Forester*, Vol. LXV, No. 6., June 1939) p. 312.
[43] *Ibid*, 313.

they would be useful as railway sleepers, one of the most important requirements for wood on the frontier.

Chitral forests also contain small numbers of Blue Pine and Silver Fir, and in some areas there are a few Chiligoza pine, but Deodar forms roughly 90 per cent. of the growing stock. The only detailed survey of Chitral forests was made in 1909, and it is significant that the total forest resources of the state were given as only 38,000 acres or 60 square miles.[44] Since that time considerable cutting with scarcely no reforestation has probably severely cut into that initial estimate—a fact which is not fully recognized by the government authorities.

Of Chitral's most heavily forested areas, the best stands are to be found in the south-western portions of the state, i.e. in the Chitral River valley near the Afghan Frontier. Fraser-Tytler describes the adjacent Afghan province of Nuristan as being 'clad with magnificent forests of deodar, larch and pine'.[45] Were it not for continual friction with the Afghan Government, logs from the Chitral valley could very well be floated down the Kunar River and then via Jalalabad and the Kabul River to Peshawar. So far no contractor has managed to secure permission from the Afghan Government to use the Kunar for this purpose.

To appreciate the difficulties under which agriculture is carried on in Chitral, one has only to look at the marvellous irrigation facilities the people have managed to carve out of the mountain-sides. In many cases gravity-flow irrigation channels over 10 miles long carry water tapped from mountain streams into oasis-type settlements located wherever valleys have widened sufficiently to permit agricultural activities. Such elaborate channels are imperative in view of the limited rainfall amounts and the entrenched nature of most of Chitral's river valleys.

The majority of Chitral's poverty-stricken people eke out an existence from narrow strips of barley, wheat and jowar (millet) supplemented to some extent by rice, vegetables and a variety of fruits. It is understandable that most of the food grown is consumed locally; indeed the state has to import a considerable amount of its basic requirements from outside sources. Yields per acre, as well as production statistics, are given in the table at the end of this chapter.

A serious problem which the local authorities have not bothered to control is the increased amount of acreage being devoted to the cash crop char. Besides taking a great deal of land ordinarily used for food crops, this local narcotic greatly depletes soil fertility to the

[44] Wright, H. L., *op. cit.*, p. 313.

[45] Fraser-Tytler, Sir W. K. *Afghanistan* (London, Oxford University Press, 1953), p. 5.

point where it takes some years for the soil to recover. Another difficulty associated with farming in Chitral is the fact that most cultivation takes place on de-forested undulating or steep sloping land, with the result that incorrect or even too shallow ploughing (it must be taken into account that the peasants are for the most part totally ignorant of scientific farming techniques) often produces disastrous results: serious inroads are made by the forces of erosion.

As a result of a sufficiently long growing season and the availability of ample irrigation water, it is possible in Chitral to grow two crops in a year; whereas in Mastuj only one third of the total cultivated land is capable of being double-cropped. In the unirrigated or 'Barani' lands pulses are apparently the only worthwhile crop that thrives.

Although relatively extensive areas of grazing or 'pamir' land exist in the extreme north-eastern reaches of the state, the Chitralis consider this area too far away and too hazardous to bring their own flocks to these uplands. Taking advantage of such good pasturage, however, are the Wakhi, a nomadic people who cross over the low divide from the Wakhan to the Yarkhun valley during the summer months.

With the exception of small areas bordering on Afghanistan and Gilgit, the entire state focuses economically and politically on its capital Chitral. Lying approximately one third of the way up the Chitral River from the Afghan frontier, the city is situated on what is probably the widest and most fertile place in the entire 200-mile-long valley. In actual size the settlement is something over two miles long, built on a large alluvial fan and laid out in a rather haphazard fashion with the traditional bazaar dominating the town's centre. Close by is the royal palace of the Mehtar together with the town's Polo Field; 'standard equipment', so to speak, of practically every settlement in the state. The city is located on what purports to be a motorable road (at least most of the year) approximately 50 miles from the Lowarai Pass. Of the 40 or so vehicles in use in the state, practically all are engaged in a shuttle service between Chitral and the state's second largest town, Drosh, the main focal point for the southern portions and the gateway to the Lowarai. Drosh is also the site of the only airport in the entire state.

Communications, or realistically speaking a lack thereof, will continue to dominate any future economic development of Chitral. Although there has been a lot of talk recently on the part of the Pakistan Government about tunnelling through the Lowarai in order to connect Chitral for the whole year with the lowlands, it is extremely doubtful, in view of the small economic returns expected from such a costly project, whether it will materialize. As it is Chitral is a costly

piece of real estate to the Pakistan central government. This is attested by Karachi's having to subsidize the state by way of a direct grant (180,000 Rupees) amounting to more than one seventh of the state's total income.

The one big development scheme planned for Chitral by the Central Government has not yet even got to the drawing board phase. This involves the construction of a 400 foot high reservoir dam about 2 ½ miles downstream of the village of Mirkhani, with the main purpose of substantially improving the winter discharge of the Chitral River. This reservoir will reach beyond, but it will not affect Drosh, and since the wide valley floor upstream is sparsely populated it will not involve the displacement of many people.[46] Just how much direct value this dam will have for the state as a whole is open to doubt, particularly since a great deal of its storage water already seems committed as a result of a tie-in planned for it via the 'Panjkora Steps' scheme to the proposed huge Kalangi Storage Reservoir on the Lower Swat River Gorge.

SWAT STATE

Quite fittingly, this largest and most important of the princely states that still remain intact on the NWF takes its name from the river which, ever since Alexander's time, has exerted an influence in the region far exceeding its physical proportions. The value of the Swat River is not, as one might expect, a result of its function as an avenue of trade and transport, since as Barth points out, 'the river is a dead end as far as communications are concerned';[47] rather one must look to its role as a focal point for settlement, which in this case is known to have taken place long before the Classical period.

Moodie suggests that the importance of a river to a state might be better understood if attention were paid not only to the condition of the valley itself, but also to the physical condition of the land in its immediate hinterland.[48] Taking into account the severity of the surrounding country in this case, his thesis would seem to have a great deal of merit. In addition one might also interpret the importance of the Swat River more broadly as one of the most favourable and extensive areas of valley settlement within the entire mountain backbone that stretches from Assam to Chitral.

[46] U.N.O. Report to Government of Pakistan on Right Bank Tributaries of the Indus (Rome, FAO, Part 1, 1957), p. 62.

[47] Barth, F., *Political Leadership Among Swat Pathans* (London, Athlone Press, 1959), p. 2.

[48] Moodie, A. E., *Geography Behind Politics* (London, Hutchinson's University Library, 1947), p. 43.

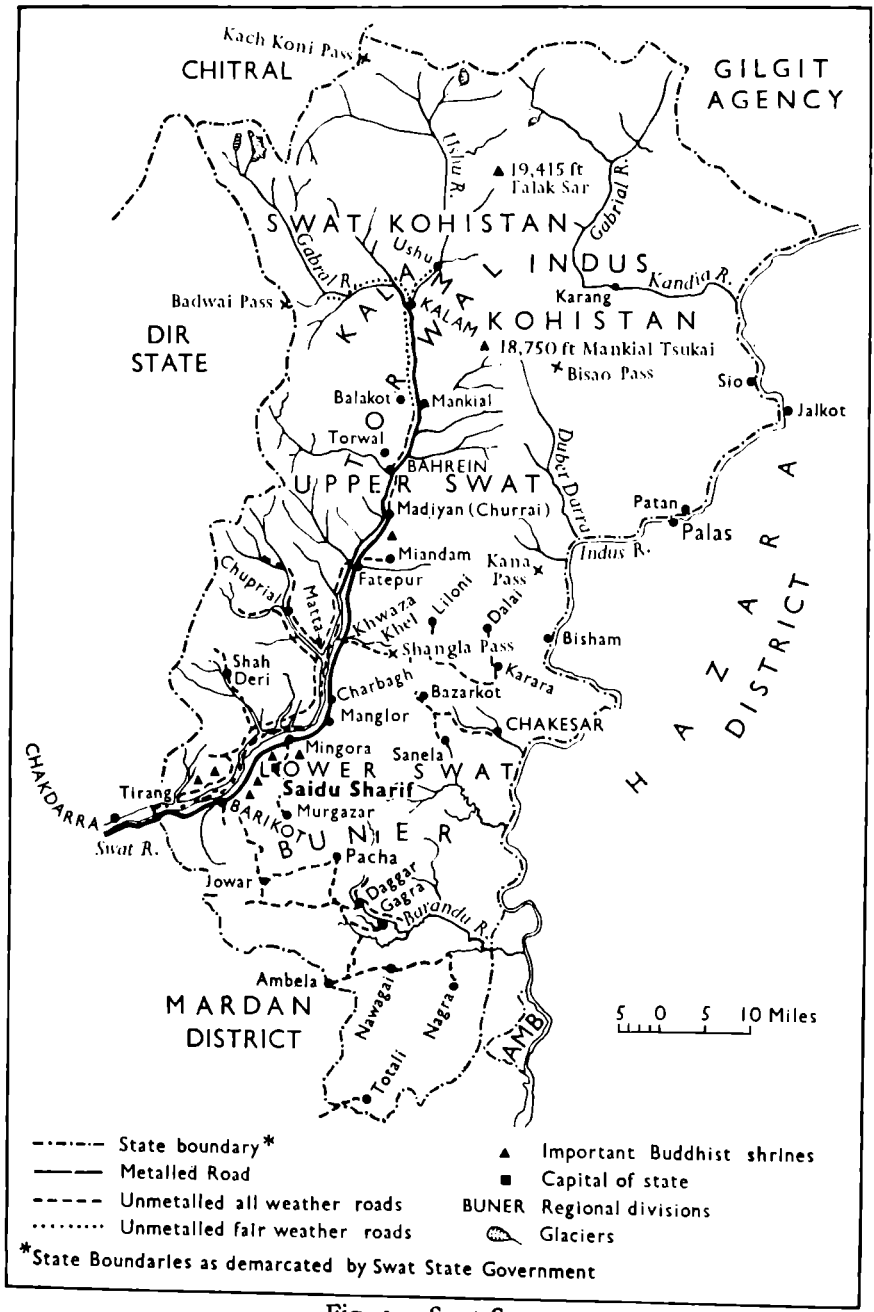

Fig. 9. Swat State

As a result of its more interior location in relation to the much sought after fertile plains of the Peshawar basin, the Swat valley, like the wild mountain fastness which surrounds it, has played the role of haven for those seeking asylum. In this case the Yusufzai Pathans, after being driven out of the Peshawar Basin by the other main faction of their own clan (the Mandanr Yusufzai),[49] fled to the Lower Swat valley, where they in turn forced the original Dardic-speaking inhabitants to take refuge in the remoter parts of Kohistan and northern Hazara.

In sheer numbers the Pashto-speaking Yusufzai are unquestionably the dominant group in Chitral today. With a population estimated at the 1961 census to be over 600,000, these people are found mainly living within the main Swat valley below the Torwali-speaking village of Madiyan (Churrai). As to their origins, historians can agree only on the fact that they migrated from the area around Kabul in the sixteenth century into the Peshawar valley. After reaching this tract they expelled the little known local inhabitants called the Dilazaks to Hazara, where they remain in isolated pockets still. This then enabled the Yusufzai to acquire the plains country north of the Kabul River and west of Mardan.

In May 1926, after a 10 year struggle against various local Khans as well as outsiders from Buner and Dir, Miangul Gulshehzada Abdul Wadood succeeded in consolidating the Swat valley under his leadership. At that time he was recognized by the Government of India as the 'Wali' or ruler of Swat State. By 1939 this energetic and capable grandson of the great religious leader, the 'Akhund of Swat', had extended his control to include not only the entire length of the upper Swat valley but all of Kohistan east of the Indus as well. The present Wali, his son Miangul Jahanzeb, took over in 1940. At the present time he maintains an army of about 10,000 men, the majority of whom, however, are reservists living in their homes. He also keeps a garrison of 40–50 men in each of his 75 forts which are dotted all over Swat State.[50]

After partition, Swat became internally independent of the Pakistan Government, in as much as it maintains its own system of justice, its own army, police, and taxation system. The powers of the Wali are taken as absolute (they include the passing of the death sentence) and are invariably obeyed without question by his subjects. Nevertheless, the state is dependent on the Central Government of Pakistan for its

[49] Recruiting Office Peshawar, *Pathans* (Delha, Government of India Press, 1938), pp. 53–54.

[50] Government of India (Recruiting Office Peshawar), *Pathans* (Peshawar: Government of India Press, 1936), p. 65.

currency, post and telegraph services, electricity and foreign affairs (including its defence against external aggression). The Political Agent or official representative of the Central Government responsible for Swat is based in Malakand some 30 miles by paved road from the capital Saidu Sharif.

The Wali maintains an Advisory Council consisting of 25 members, 15 of whom have been elected by male adult franchise, while the remaining 10 are appointed directly by the ruler. In addition there are 2 long-trusted ministers, one of whom is responsible for finance and the other for administration. The state is divided for purposes of taxation and administration into 35 'Tahsils' (local districts), each of which is administered by an appointed 'Tahsildar' and a 'Qazi' (judge). Groups of Tahsils are united under 7 'Hakims' (district officers), who in turn are responsible to one of 3 'Mashirs' in charge of the broad geographical regions of Upper and Lower Swat, Kohistan, and Buner. These last named officials are in frequent consultation with the Wali who is assisted in exercising firm control by an elaborate telephone system linked to all his outlying forts.

The boundaries shown on the map (Fig. 9) of Swat State are those claimed by the present Swat State Government. This qualification becomes necessary in view of a difference of opinion that exists between the two governments over the residual ownership of the Kalam area. Whereas the State Government never likes to think of Kalam as being anything but part of their State, the general opinion of the central government is that it is only temporarily being administered by Swat State on their behalf. Were it not for the fact that the Central Government is planning a dam there, and possibly that the area is an attractive tourist resort of people in the Punjab and lower Pakistan, it would be hard to see why Pakistan persists with this policy.

This dispute over Kalam immediately raises the question why the Central Government tolerates Swat's existence as a separate state. Many answers have been advanced in explaining this phenomenon, but none is better or more realistic than that put forth by the Wali's Chief Secretary, when he said that 'it would probably be far more troublesome for the Central Government to take over Swat than it would be to leave things as they are now.'[51] As it is, the Pakistan Government indirectly wields a great deal of power in Swat. This is especially evident in their firm control over trading licences, which means in effect that they have the final word on everything Swat tries to buy from abroad. When, for example, the Pakistan Government

[51] Personal interview with Ataullah Khan, Chief Secretary to the Wali of Swat, 26 Dec. 1960.

exercise their jurisdiction in such matters as road-building equipment and building materials like tar and asphalt, they are in a position to check any ambitious road schemes; similar control can be exercised over the importation of high quality German dyes which are wanted in order to improve locally made cotton and woollen goods. Other complications arising out of this peculiar governmental relationship concern the use and eventual hydro-electrical development of the Swat River. As it is the Swatis complain that they are paying WAPDA[52] for the use of electricity that is being generated from the waters of 'their river'!

Swat Valley. Swat proper can be said to comprise a 50-mile-long portion of the valley which extends from the state's southern political limits, a few miles above Chakdarra (Landakai) to the village of Madiyan (formerly Churrai), which is about 35 miles north of Swat's largest city, Mingora. Not only does Madiyan mark the place where the flood plain of the Swat River comes to an end, but in and around this village, with the beginning of the mountain terrain, the Kohistani dialects begin to replace Pashto as the mother tongue of the people. Between Madiyan and Landakai (southern border post on the river) the valley averages about two to three miles in width and displays the normal characteristics of braided seasonal-flow mountain rivers. It is subject to devastating floods, which in this case are also responsible for compensating deposits of fertile silt. Bank erosion and undercutting with the subsequent loss of considerable excellent farm land is another problem associated with the Swat River, largely because of frequent shifts in its course. Although it is intersected by numerous ravines and glens, these are of little importance since they are for the most part only seasonal flowing 'Khwars' (large nullahs—dry stony stream beds).

Having been under cultivation for upwards of 2,000 years, there is hardly a square yard of tillable land here that has not already been brought under the plough. As expected, cultivation is intensive; this region sustains more than half a million persons. In a total area of approximately 150 square miles this produces the staggering density of well over 300 persons per square mile; more than twice the average population of all other tribal regions.

Maize is undoubtedly the most important crop grown, particularly in the irrigated river lands. In terms of production it exceeds by more than 3 to 1 its closest competitors, rice and wheat. So well known is

[52] Water and Power Development Authority (central government organization monopolizing all water and power development in Pakistan).

the quality of the maize grown in Swat, that the state is known throughout the entire NWF as the 'granary of maize'.[53]

In order to facilitate the retention of the water once it has been led on to the low-lying fields by canals and cuttings from the river, a system of terraces is used extending from the river's edge to the foothills. The baranni lands on the other hand are usually confined to those hillsides bordering the river where it is possible to use a pair of bullocks.

Though not nearly so hot during the summer months as the plains to the south, the valley does suffer from a higher humidity. This might be attributable in part to the large amount of paddy cultivation carried on here and might also be a result of the surrounding hills preventing a certain amount of air circulation. Winters are on the whole mild, with snow only infrequently reaching the valley floor. The fact that so much emphasis is given to the kharif[54] (summer) crop in the valley serves to emphasize this condition. Rainfall, as shown in Figure 3, is nearly evenly distributed between the warm and cool seasons, but since a great deal of irrigation is carried out in this area is mainly significant for the cultivation of the hillside baranni lands.

Kohistan. Kohistan is normally divided by local custom into the Indus and Swat sections, presumably because of their geographical contiguity to these two main river systems. Barth refines this somewhat by demarcating Kohistan on a linguistic and ethnic basis, i.e. (1) Kohistani proper of Indus Kohistan, subdivided into two dialect groups, and (2) the 'Gawri' and 'Torwali' groups of north and south Swat Kohistan respectively.[55] By interpreting information from Barth and local sources it was found that a more precise geographical delineation of Kohistan could be worked out by assigning the drainage parting of the Swat-Panjkora systems as the regional boundry for Dir-Swat Kohistan and the Swat-Indus drainage divide as a basis for dividing Indus and Swat Kohistan.

Of the three main dialects which comprise the Kohistani (Dardic) language group, Torwal is spoken in an area roughly extending from Madiyan to Kalam, Gawri north of Kalam to the Shandur Range, and Maiya in Indus Kohistan.[56]

[53] Board of Economic Enquiry, University of Peshawar, Peshawar: Modern Press, 1956.

[54] This is generally regarded as the summer crop; it is sown any time between May and August and reaped between early September and the close of the year. 'Rabi', its counterpart or winter crop, is sown between October and January and generally reaped April or May.

[55] Barth, F., *Indus and Swat Kohistan* (Oslo, Forenede Frykkerier, 1956), p. 12.

[56] Grierson, Sir G., *Towal* (London: Royal Asiatic Society, 1929), p. 1.

Sprinkled throughout Kohistan and Upper Hazara, and even extending into Buner are a nomadic-type people known as Gujars. Whereas Barth ascribes certain ethnic and linguistic attributes to these folk,[57] local tradition has it that the term Gujar applies in a general way to any landless group of Kohistanis who support themselves almost entirely on small herds of cattle and buffaloes. These people, however, are not to be confused with a group called 'Ajars' who also live in Kohistan and who carry on most of the goat and sheep herding in the region. Evidence now available indicates that a certain amount of consolidation is taking place among the Gujars with the result that they are beginning to cultivate pieces of land, usually as tenants of already settled Kohistani groups.

In meeting the demands of an environment as formidable as that of Kohistan, the people, particularly in Indus Kohistan, practise an extreme form of transhumance, which centres on annual movements involving whole village populations between altitudes of 2,000 and 14,000 feet. Their wholesale movements involve the occupation of as many as four to five different houses a year, based on an altitude belt appropriate to various seasonal conditions.

For the subsistence farmers of Kohistan, as in the main Swat valley, maize is pre-eminent, followed by wheat, barley and rice, in that order. Terracing and irrigation are both prerequisites here as a result of the excessive angle of the slopes and the limited rainfall.

In contrast to the Kohistani people in the vicinity of the Indus, those in the Kalam and the Torwal areas practise a form of transhumance. This involves daily movement between permanent valley bottom settlements at 6,000 to 8,000 feet and the mountain pastures not much more than a few thousand feet higher.

Buner. Though the southern portions of Buner are more closely connected with Mardan District, located in the Peshawar Basin there are also all-weather road connections with the main Swat valley via the 5,000 feet Karakar Pass. Lying immediately to the south and east of the main Swat valley, Buner together with Chamla, though a part of Swat State, formerly constituted an independent area peopled by Mandanr Yusufzai, who in taking the name of the area they lived in became known as 'Bunerwals'.

The low hills which comprise almost the entire area, having been denuded of their original forest cover since very early times, give Buner a barren and hostile appearance. This coupled with the limited irrigation facilities offered by the Barandu, the main river draining the region, puts the Bunerwals almost entirely at the mercy of the

[57] Barth, *op. cit.*, p. 76.

none too reliable seasonal rains. In addition the soils of the area are on the whole coarse and gravelly, thus making it necessary, even as far back as the end of the last century, to bring food grains into Buner from outside areas in order to meet basic food requirements.[58]

Current Conditions. With the exception of those development projects requiring large outlays of capital, such as dam construction and river control, the former Wali and his son who succeeded him have done exceptionally well in administering Swat. Their control, from the standpoint of the state's political integration, would seem in itself to be enough of a compensating factor, but mention must be made as well of the modern towns which they have created out of Mingora and the neighbouring capital and sister-city Shaidu Sharif, and of the establishment of numerous hospitals and a free school system.

The advantages derived from the Wali's strong centralized control are evident in part from Swat's forestry programme. Each year about 800,000 cubic feet of lumber are floated down the river to Mingora and Landakai, and are taken thence by truck to the railhead at Dargai (located on the Peshawar side of the Malakand Pass). This sustained yield is made possible by the division of the state into 20 forest groups which are cut in rotation on a rigidly enforced 20-year basis. In spite of the successes that even this limited but planned forestry programme has achieved the state is still in immediate danger of losing much of its forest cover, due to consistent over-grazing and indiscriminate felling of trees by Gujars and other semi-nomadic groups.

Fortunately, the Swat River and its tributaries are large enough to make commercial timber extraction feasible even in some of the remotest areas. If it were not for this, Swat would gain nothing from its forest resources, since those areas most easily within reach from the all-weather roads in the main valley and Buner have been all but stripped of their original forest cover. This condition is illustrated pointedly by the fact that dried animal dung is more widely used than wood for cooking and heating purposes in the lower Swat valley. Nothing more strikingly reveals the sort of problems Swat can expect to face during the coming years than a comparison of population statistics. In 1884 it was estimated that there were approximately 96,000 people residing in the Swat valley;[59] 77 years later this number had catapulted five-fold to a little less than half a million. In spite of the threatening implications of these figures, most of the state's

[58] Paget, W. H., and Mason, A. H., *A Record of the Expeditions against the NWF Tribes* (London, Whiting and Co., 1884), p. 78.

[59] Estimated by Chief Secretary to the Wali, 26 Dec. 1960.

officials, without even as much as acknowledging this astronomical growth in population, are interested only in pointing out that Swat is one of the few areas of the NWFP which is self-sufficient in food grains. This fact, if it is one, seems of little practical value to one who has been in the area and has had the opportunity to note the extremely poor physical appearance of such groups as the Gujars and the landless tenant farmers of the valley. To add to the contradictions already associated with the term 'self-sufficiency', it might be pointed out that during the year 1955 statistics bearing on imports and exports entering and leaving Swat via Landakai indicated that wheat and rice were both imported and exported during this single season. Makhdum offers the explanation that there probably were not adequate storage facilities in the valley during the period of maximum harvests and hence more grainstuffs went out of the state than should have, making it necessary later on in the year to import the difference.[60]

Although the Central Government of Pakistan has put out considerable information about the great material rewards the people of Swat can expect to gain once their much vaunted plans to build a 400 feet high dam on the Swat River near Kalam have been realized, a recent report on the scheme by U.N. experts from the Food and Agriculture Organization is decidedly less optimistic. Their report indicates that not only are the geological conditions unfavourable for the construction of the dam at Kalam, but what is more the discharge of the Swat River 'cannot be fully exploited on account of the restricted dimensions of the reservoir.'[61] The U.N. study does imply, however, that the gorge of the Swat River between Kalam and Madiyan with its relatively steep slope is suitable for the construction of diversion weirs and tunnels, which could be used not only for generating hydro-electric power, but for aiding flood control as well.[62] It appears that such a project as this is far more realistic, especially with regard to the immediate needs of the people of the Swat valley, than the grandiose Kalam scheme, the construction of which, oddly enough, seems to be planned solely as a means of increasing the winter discharge of the Upper Swat Canal, thereby enlarging the area it services (in the Peshawar Basin) and assuring a more reliable winter water supply to aid power generation at Malakand.

'Landlordism' in Swat not only poses a continuing problem, but actually seems to have become more entrenched with the emergence

[60] Makhdum, T. A., *A Study of the Social Institutions in Swat State* (Lahore, Sociology Department., Punjab University N.D.), p. 2.

[61] U.N.O., *Report to Government of Pakistan on Right Bank Tributaries of the Indus* (Rome, F.A.O., Part 1, 1957), p. 72.

[62] *Ibid*, p. 30.

of a special class of revenue collector. (*See* Chapter IX, Social and Economic Conditions.)

With approximately 450 miles of all-weather roads now available, with mountain scenery which in areas like Kalam rivals even Switzerland in natural beauty, it is understandable that Swat State is attracting between 3,000 and 4,000 foreign tourists a year, including the Queen of England as Head of the Commonwealth in late 1960. Anticipating continuing interest in this direction, the Wali himself has had constructed in Shaidu Sharif a modern 30-room hotel, which is the equal of any first class hotel in the rest of Pakistan. Other important sources of income to Swat are the sale of Swati blankets and woollen hats, one of which can certainly be found in every Pathan household in both Pakistan and Afghanistan. Honey from Swat is also beginning to gain a considerable amount of popularity, particularly in the 'settled' areas of the Frontier.

Sample Survey—Sangota Village, Swat State

SANGOTA VILLAGE, SWAT STATE

This village is located about 4 miles north of Mingora and consists of about 120 houses.[63] Of the 120 families living there eight are Pakhtun, the highest group socially as well as the largest landowning class; and another sixty families are 'Sayyids', hereditary religious leaders who are locally known as Miyans because of their being descendants of the famous local prophet Pir Baba. The Pakhtuns own outright about one half of the total land of this village, while the Sayyids control most of the rest. Following the usual pattern, which occurs along the entire Frontier, the Sayyids first came to this village to serve the spiritual needs of the people, but later on through clever manipulation over the years, especially as go-betweens or arbiters in disputes involving land, they gradually acquired a considerable amount of land for themselves. Most of the rest of the people in Sangota are tenants of either the Pakhtuns or Sayyids or else are working in Mingora and elsewhere in service. All of the men in this village actively take part in the 'Jirga' (local assembly or village council meetings), but only those individuals holding land actually have any real say in matters.

Though the village itself is perched on a knoll about 150 feet above the general valley level, about a quarter of its holdings are irrigated riverine land. In actual amount this comes by local calculations to 50 'Jaribs', (1 Jarib = 4 'Kanals'; 8 Kanals = 1 acre), while the rest (150 Jaribs or 75 acres) may be classed as 'baranni' (land which is entirely dependent on rainfall for its moisture supply). It should be noted that the people of Swat use another system of measurement than Pakistan. Here they divide their holdings into 'pice', with 48 pice equalling 1 'share'. Its closest equivalent to

[63] This is the usual way of estimating population on the Frontier, and since the figure of twenty is generally accepted as being the average number of each household, the number of people in this particular village is probably about 2,400.

the standard units of measurement in Pakistan is the fact that 1 Share equals 4 Jaribs, which equals 16 Kanals and therefore two acres.

On the baranni land a tenant shares his harvest on a half-and-half basis with the owner; while on the irrigated land he gets two shares for every three that go to the owners. In both cases the tenant supplies the seed and cattle in working the land of this village. It was found that neither the Pakhtun nor any of the Sayid landowning families in Sangota holds plots larger than 20 Jaribs (10 acres) or less than three Jaribs.

As is the case all over the Frontier a few families are attached to the village in a service capacity; in Sangota we find 2 families who are functioning as barbers, 2 as blacksmiths, 3 as carpenters and 6 are 'parachas' (people who contract their donkeys to haul loads etc.). In order to supplement their incomes some 30 tenant families are known to sell their cow milk.

In interviewing one of the parachas of the village it was learned that he owned 4 donkeys, each of which cost him 200 Rupees. He uses them almost exclusively in his own village to haul manure, bricks, grain and any other loads required by the 20 families he normally serves. For these services he receives 1/20 of the harvest of each family, which according to his calculations amounts at harvest time to something like 20 maunds (500 lbs.) of grain stuffs, pulses etc. On this amount a family of 11 people are dependent for a considerable amount of their food, although six of the maunds have to be sold (for about 100 Rupees) in order to purchase the families' needs of cloth and other manufactured items. These families supplying services as barbers, carpenters etc., normally receive 12 seers (1 seer equals approximately 2.2 lbs.) of grain stuffs for each pair of bullocks owned by the people they are serving. About 50 pair of bullocks are being used in this village.

Ordinarily Sangota is forced to buy nearly two-thirds of its food requirements from outside, although when the rains have been exceptionally good for the baranni lands they can get by with only having to buy half. This extraordinary deficit is largely compensated for by the earnings of the village people from outside employment; either by some sort of job in Mingora, or by working as a member of a Public Works Department road construction gang, or else by felling wood in the nearby forests, usually on a contract basis. In addition at least two or three members of each family have to find employment outside of Swat in such distant places as Peshawar, Lahore and even Karachi, in order to provide a further supplement to their family's income in the village. Village loyalty is of considerable importance since, no matter how long these people reside outside Sangota, they always regard it as their real home.

During the winter months the population of the village is swollen by ten to twelve families. This is a condition common to most Swat valley villages and results from regular influx of nomadic herders called 'Ajars'. Living in 'kutcha' houses (temporary, or of poor condition) provided by the village, these people in exchange for such accommodation and the protection offered by the village turn their flocks of sheep and goats on to

the stubble in the fields, providing valuable and much-needed manure. In the summer these herders take their flocks (which in this case number about 600 sheep and goats) up to the higher lands of Swat Kohistan some 40 miles from the village.

The people of Sangota pay nothing for the water they use for irrigation. The villagers themselves have constructed the necessary cuts out of the Swat River from which they draw water requirements. In this instance they can take as much water as they like as often as they like. Their main trouble, however, is flood control. Within the past ten to fifteen years Sangota is estimated to have lost nearly 2/3 of its irrigated land as a result of devastating floods. Without waiting for any government help the people of this village tried desperately to fight the river with their own home-made bunds, only to see their efforts quickly washed away. They were quick to point out that only immediate government aid in this matter could prevent the loss of the rest of their highly valued irrigated land.

The fact that these floods have, according to the villagers, reached their most severe proportions only within the last 10–15 years indicates that the effects of population pressure coupled with such problems as overgrazing and deforestation are now beginning to exact the frightful tolls long expected. This situation also underlines the disadvantages connected with the functioning of such small native states as Swat; that is to say, they do not have enough capital at their disposal to engage in costly river-control projects, vitally necessary on the Swat River.

One tenth of the entire produce of the village goes to the Wali as tribute. In terms of local customs this amount is considered fair and just according to the tenets of the Islamic law known as 'Zaqat' (or locally as 'ushar'). In order not to have to store such huge amounts of grain under the provisions of Zaqat, the Wali funnels this grain directly into the economy of the state by paying most of his local officials in grain stuffs rather than currency. Thus, the income of an ordinary policeman in Swat is 20 maunds of grain stuffs per year. The local officials receiving this grain, after keeping some for their own use, will sell the rest in the bazaar for hard cash. Maize in Swat in 1961 was selling in the bazaar at Rs. 14 per maund whereas in Peshawar it was Rs. 20 per maund. This same situation, it should be pointed out, pertains to other grains as well and so, in order to sell grain from Swat in Pakistan, a permit is needed from the Wali to take it out. In view of these differences in prices, rampant violations of the permit regulations go on incessantly.

Provided there is rain on the baranni lands of Sangota village in June or early July maize will be sown and harvested within three months; otherwise the land will be left fallow till the wheat is planted the following September. The winter crop, so far as the baranni lands are concerned, is invariably wheat except possibly for a small amount of pulses grown for local consumption. The yield of maize in this unirrigated land is about 10 maunds for 16 Kanals, while wheat averages 15 maunds/16 Kanals.

On the irrigated village lands near the river rice and maize are the

main crops grown. In this village about one third is devoted to maize and the rest to rice. Rice is sown in April, the seed-beds having been made ready in March (the seed-beds take about 40 days to mature before transplanting). In winter almost all of the irrigated land is devoted to wheat with the exception of a little sugar cane which is readily converted into 'gur' (raw sugar) for local village use. The yields on this irrigated land run as follows: Rice 40 maunds for 16 Kanals, maize 45 maunds for 16 Kanals, and for wheat the yield here is 10–15 maunds for 16 Kanals. The low wheat yield is thought to result from the fact that wheat on this particular land does very poorly when double-cropped.

Approximately 80 per cent. of Sangota's population are suffering from some form of malaria, largely because of the large amount of valley land given over to wet rice cultivation. Eventually, the villagers claim, nearly everyone becomes affected with it. They admitted though that things have improved considerably since the government began spraying D.D.T. in the valley some 6 years ago.

The headman of Sangota village is called Shahrawan Khan, and as a tribute to his rank he receives a personal yearly stipend from the Wali. As a result of an incident some 30 years ago in which his father killed his uncle over a land dispute this man is obliged to remain constantly armed, in order to thwart any attempt by his cousins to avenge this murder. Because they are bound by tradition to kill him at the first opportunity, he is always accompanied whenever he leaves the village by six bodyguards, armed in this case with shotguns and carbines. Although admitting that this feud was often quite irritating to him, the headman also acknowledged that it considerably enhanced his prestige with the people of the village. He also volunteered the information that at least half the men of the village are forced to go armed when they leave the village because of blood feuds they have somehow become involved in.

DIR STATE

Dir (Fig. 10) can be said to resemble in many respects its neighbour to the east, Swat State. Both states have their political boundaries defined to a considerable extent by the physical limits of two relatively large river basins. Although the Panjkora and the Swat are important to each state because of the fertile alluvial flood plains they have developed, and to a certain extent because of the role they play as avenues for commerce and transport, each nevertheless lacks political unification; as a result (particularly in the case of Dir) no real sense of regional consciousness has developed.

It is in the upper portions of either state that we find most similarity, not only in physical but in social conditions as well. Both regions have an appreciable forest cover still intact and ample grazing-grounds, and both offer refuge to remnants of Kohistani-speaking hill-men. Indeed both the upper Panjkora and its parallel area in Swat are

often referred to as Kohistan. In addition the land-owning population in these areas, especially those in the lower valleys, are invariably of Pathan origin.

Neither in actual size nor in natural resources, however, can Dir State be compared with Swat. One might even go so far as to say that Dir's sole importance in the NWF lies in the fact that through it leads the most direct route connecting Chitral and its strategic Hindu Kush passes with the garrisons in Malakand and Peshawar. Before its construction in 1895 troops sent to Chitral from Rawalpindi were obliged to travel via Srinagar and Gilgit, a total distance of 647 miles; or via Abbottabad, Chilas and Gilgit, a distance of 481 miles.[64] The route connecting Peshawar to Chitral is only 160 miles and also has the distinct advantage of avoiding a great deal of the difficult terrain which characterized so many of the earlier roads.

In order to ensure that this route was kept open, the British government not only resorted to force where appropriate to existing circumstances, but also found it expedient to subsidize the most prominent leader in the area, the Khan of Dir. In an agreement similar to that made with the Akhund of Swat, the Khan (later the Nawab) of Dir was left to govern the territory incorporating Dir State after his 'own methods' without interference from the British Government, provided, of course, that the road was always kept open for the passage of troops moving in relief of Chitral.[65] In order not to upset the delicate political balance in Dir, which in a large measure still obtains today in spite of the former Nawab having been deposed by the Central Pakistan Government, the British authorities left the tribesmen to administer the country through their own tribal councils. They also had a hand, under the direction of Sir John Maffey, in demarcating Dir's eastern boundary with Swat.[66]

Sharing approximately a third of its western border with Afghanistan and inhabited by aggressive tribes, which for the most part were cut in two by the imposition of the Durand Line, has inevitably made Dir a hotbed for Frontier intrigue. After partition, this was further complicated by the former Nawab of Dir, a man who is known to have spent more money on the upkeep of his Shikar hunting dogs than he allotted to his total budget for education in his state. In attempting to keep his own feudal rule intact, particularly after early 1960 when public pressure in Pakistan was swinging violently against him as a

[64] Fincastle, Lt., and Elliot-Lockhart, P. C., *A Frontier Campaign* (London, Methuen and Co., 1898), p. 16.
[65] *Ibid*, p. 17.
[66] Cobb, E. H., 'The Frontier States of Dir, Swat and Chitral' (*Journal of the Royal Central Asian Society*, Vol. 38, 1951), p. 171.

result of his cruel régime, it is thought that he tried to enlist support from Afghanistan, thereby ultimately bringing about his banishment from Dir by the Pakistan Army in November 1960. At the present time the state is being ruled by one of the Nawab's younger sons, several others having gone into banishment with him. The present Nawab's rule is, as a result, neither as autocratic as that of his father, nor as unheeding of the 'suggestions' proffered by the Ministry of Frontier States and Agencies in Rawalpindi. Evidence to this effect can be seen from the new Central Government-sponsored schools and hospitals launched in conjunction with recent army operations in the area.

Since Dir State is essentially coterminous with the basin of the Panjkora River, the state is, as might be expected, only a few miles wide where the river has its origins. This occurs near Tal Pass, a region in the Shandur range which also acts as a watershed for the Laspur and Upper Swat Rivers. As the Panjkora works its way southward picking up tributaries accordingly, the state territory likewise grows in size until it reaches its maximum width of about 40 miles when it finally drains into the Swat River near the village of Kalangi. Its length is about 70 miles giving it a total area of just over 2,000 square miles.

The fact that Dir city, the capital of the state and also its leading city, lies on the Lowarai, a relatively minor tributary of the Panjkora which provides the main access to Chitral (via the Lowarai Pass), serves to emphasize the real reason for Dir State's administrative existence. Although the Nawab of Dir, for the most part abided by his agreement with the British by not interfering with their troop movements to and from Chitral, he eventually did choose to interfere with the right-of-way of others. This involved the imposition by force of road levies and tolls on the caravans which soon began to find their way over this new route to Peshawar and the plains of Hindustan from Central Asia, Afghanistan, and Chitral. As a result Dir City and the Lawarai route soon began to overshadow the more naturally endowed upper Panjkora as the core area of the state. The partition of the sub-continent, a firm Soviet grip on Central Asia, the takeover by Communist China of Sinkiang and continuous border difficulties between the Chitral Governments of Pakistan and Afghanistan have severely cut into the amount of trade now passing through Dir.

For purposes of analysis, Dir State can be thought of as consisting of three separate areas, each of which has relatively little contact with the others. Broadly speaking, these are: a southern area bordering on the Malakand Protected Area and the Mohmand Agency and focus-

ing on Chakdarra Fort and the Lower Swat valley, plus a second area of concentration farther to the west along the Jandol River and the village of Sado; a central or core area lying along the Lawarai stream and including the capital of the state, Dir City, along with the palace of the Nawab; Upper or northern Dir, sometimes called Dir Kohistan, Bashkar, or the Kamrat, is regarded as embracing the rest of the state north of the village of Shirungul.

Although theoretically lying in Dir territory, the strategic form at Chakdarra has always been under the direct jurisdiction of regular army forces at Malakand Fort some 10 miles to the south. So important to the British was Chakdarra that the bridge they built there across the Swat River was made strong enough to carry a light railway in the event that this should become necessary.[67]

From Chakdarra the road to Dir initially takes a northerly direction following the intermittently flowing Shewa Khwar; shortly thereafter it swings sharply to the west into the Adinzai valley and then over the relatively easy Katgala ('cut-throat') Pass, which divides the water-sheds of the Panjkora and Swat, before dropping down to the important village of Sado. At this place, where both the Panjkora and Jandol Rivers have developed significant flood-plains, there is easy overland access to Banjaur, the Mohmand and the Utman Khel country.

As one might expect the southern region of Dir looks to the south and west rather than to the north for most of its connections. Its most important trade outlet is via the military road to the Lower Swat valley and the Malakand Pass to the Peshawar Basin. Before the recent border disturbances in the Bajaur area there was a considerable amount of trade (a great deal of it illegal) since it involved large quantities of narcotics, between southern Dir and Afghanistan, a significant portion of which probably initially came from Chitral.

As in other parts of the Frontier, extensive depredations on the area's forest cover, combined with a total absence of conservation measures, have succeeded in denuding the hills of the rich forests they once certainly supported.

Where cuts have been made in the Panjkora and other large yearly flowing streams irrigation supports intensive cultivation of rice and other food grains on the alluvial flood plains. Otherwise, farming is restricted to unreliable baranni hill tracts supplemented by usually large, but for the most part unproductive, herds of cattle, sheep and goats. Similar conditions prevail in the Chutiatan-Dir City area, but

[67] Preston-Thomas, Lt. A., *A Trip to the NWF of India* (London, His Majesty's Stationery Office, Admiralty, 1910), p. 7.

aside from this scanty information little is known about the area except what can be gleaned through cursory observations while one is en route to and from Chitral.

The one tenuous connection the capital city has with its southern areas is based solely on the military road as it skirts the gorge of the Panjkora River. Practically no information is available about the stretch of country between, i.e. Udegram and Chutiatan, except that it is barren and inhospitable, probably as a result of the combined effects, once again, of total deforestation and severe erosion. Communications above Chutiatan, which itself lies at the junction of the Lowarai and Panjkora, towards Dir Kohistan can be relegated to the status of mountain trails. The point where the Panjkora passes through a particularly narrow ravine near Sheringul is considered to form the boundary between Dir proper and Dir Kohistan. Above this point the Kohistani language supplants Pashto as the mother tongue of the people.

Patrak, about 10 miles above Sheringul, is one of the largest villages in the upper Panjkora region. It is thought to contain more than 500 houses and stands on a low alluvial fan, with extensive cultivation on either side, at the meeting place of the Gwaldai stream and Panjkora.[68] Actually, most of northern Dir should be considered as being far more integrated with the Panjkora than are the other two areas. Not only is the river the principal area of convergence in so far as settlement is concerned, and practically the only means of overland movement, but it also serves as the only outlet for commercial timber extraction which is still thriving there.

Like their brethren in upper Swat, the Kohistanis of Dir have evolved a settlement pattern remarkably different from that of the Pathans living to the south of them. For one thing, the villages of this area are composed of houses terraced one above the other, the roof of the lower row of houses forming the verandah and courtyards of the row above.[69] These terrace-built villages are not protected by the thick walls and parapets so characteristic of individual Pathan houses; rather, they seem to seek their defence solely by close integration with their neighbours. Another instance of the collective approach of the Kohistanis, again typical of the Pathans, is the careful attention which they lavish on their food crops. Cultivation here, as in the southern areas of the state, is mainly concentrated in the alluvial flood plains and also in the areas where tributaries have managed to build fans. Crops of rice, wheat and maize are supplemented by fruit and nut

[68] Godfrey, S. H., 'A Summer Exploration in Panjkora Kohistan' (*The Geographical Journal*, July 1912), p. 49.
[69] *Ibid.*

trees. Ample grazing grounds ensure good fodder for the sizeable number of animals kept.

By far the largest village in Dir Kohistan is called Tal. Commanding as it does a fertile flood-plain of the Panjkora more than 10 miles long, and having relatively easy access via the nearby Badrai Pass to the Kohistani areas around Utrot and Kalam in the upper Swat valley, Tal is the undisputed centre of the Upper Panjkora. Although Pathan and Punjabi timber contractors are known to be working in the region around the Tal plain the area is still thought to contain fairly large stands of native Deodar.

The Diris, like the Bunnerwals, are a clan of the Yusufzai who have simply taken the name of the area they are residing in. Locally their clan is known as the Malazai. The Dir Kohistanis on the other hand are thought to have their origins, like all the rest of their people, in the lower Swat valley, and after being overrun by the Pathan tribes eventually filtered across the passes into the upper Panjkora region.

With regard to the administration of the state, Dir can best be described as being divided into a number of 'Khanates'. These are governed by hereditary tribal chiefs (or petty khans as they are sometimes called) who actually hold their lands and to a certain extent their position as nominees of the great feudal chief of Dir, and as such were, up to a short time ago, bound to obey his rule.[70] This association has been described by some writers as being a kind of tribal confederacy with the Nawab as its leader.[71]

The authority of the Nawab, however, depended in the last resort on the strength he was able to muster in order to maintain his position. As in Swat, the people of Dir are obliged to pay one tenth of their entire agricultural produce to their overlord, the Khan of Dir, who theoretically owns the entire state.[72]

In conjunction with a dam building scheme on the Chitral River at Kirkhani (below Drosh) the Central Government has under discussion a project known as the Chitral Diversion and Panjkora-Steps Scheme. This project envisages the construction of a 20 feet diameter diversion tunnel taking off from the 400 feet high Mirkhani dam and running by gradient flow for 23 miles under the Lowarai to Chutiatan. Here it would be stopped by a 700 feet-high weir which would also have the task of diverting the discharge of the Panjkora River. Most of the water from these two sources would be shunted

[70] Davies, C. C., *The Problem of the North-West Frontier 1890–1908* (London, Cambridge University Press, 1932), p. 51.

[71] Government of India, *The NWF of India—1940–41* (Peshawar, Manager Government Printing and Stationery NWFP, 1949), p. 8.

[72] Douie, J., *op cit.*, p. 307.

off into another 20 foot diameter tunnel southward for 14 miles followed by an open canal 3.5 miles long to Udegram. At this point a power house would be built after which the water would flow down another canal, this time 5 miles in length, to another projected power house at Balambat (near Sado).

Aside from the exorbitant costs associated with such a scheme, U.N. experts assigned to investigate the feasibility of the entire project have reported a number of serious difficulties. Again, as in the dam projects contemplated in Upper Swat, geological conditions, particularly with regard to tunnel construction, are quite unfavourable. Overthrusts sometimes reaching a height of 6,000 feet and extensive shatter zones present 'very great difficulties in the construction itself, as well as in organization.'[73] In summing up their estimate of this scheme these experts stated that not only was it uneconomical, but it also impaired the efficiency of the main scheme in the region which involves the construction of a huge storage reservoir at Kalangi at the head of the Swat River Gorge.[74]

Dir is undoubtedly one of the poorest and most badly organized of the 'independent' territories on the Frontier. This is all too evident in the large number of pitifully poor landless labourers who come down yearly to the settled areas looking for any kind of employment. Whether the Central Government, as a result of current army operations in the area, is in a strong enough position *vis-à-vis* the local Khans to break down the backward and harsh feudal system in Dir, or for that matter is even willing to do so, is not entirely known at this time. The establishment, however, of schools and hospitals in the state for the first time would seem to indicate that they are.

No statistics of any sort are available on Dir State.

MOHMAND AGENCY

(Including Bajaur)

Although the Mohmand Agency borders on a large section of Peshawar District, and is fairly accessible by any number of routes, it is still today one of the most isolated areas along the Frontier (Fig. 10).

The Mohmands are divided into the Bar (hill) or Kuz (plain) Mohmands. Of all the tribes on the Frontier they probably fared the worst when the Government of India persuaded the Afghan Amir Abdur Rahman to accept the boundary delineations proposed by

[73] U.N.O., *Report to Government of Pakistan on Right Bank Tributaries of the Indus* (Rome, F.A.O., Part 1, 1957), p. 62.

[74] *Ibid*, p. 67.

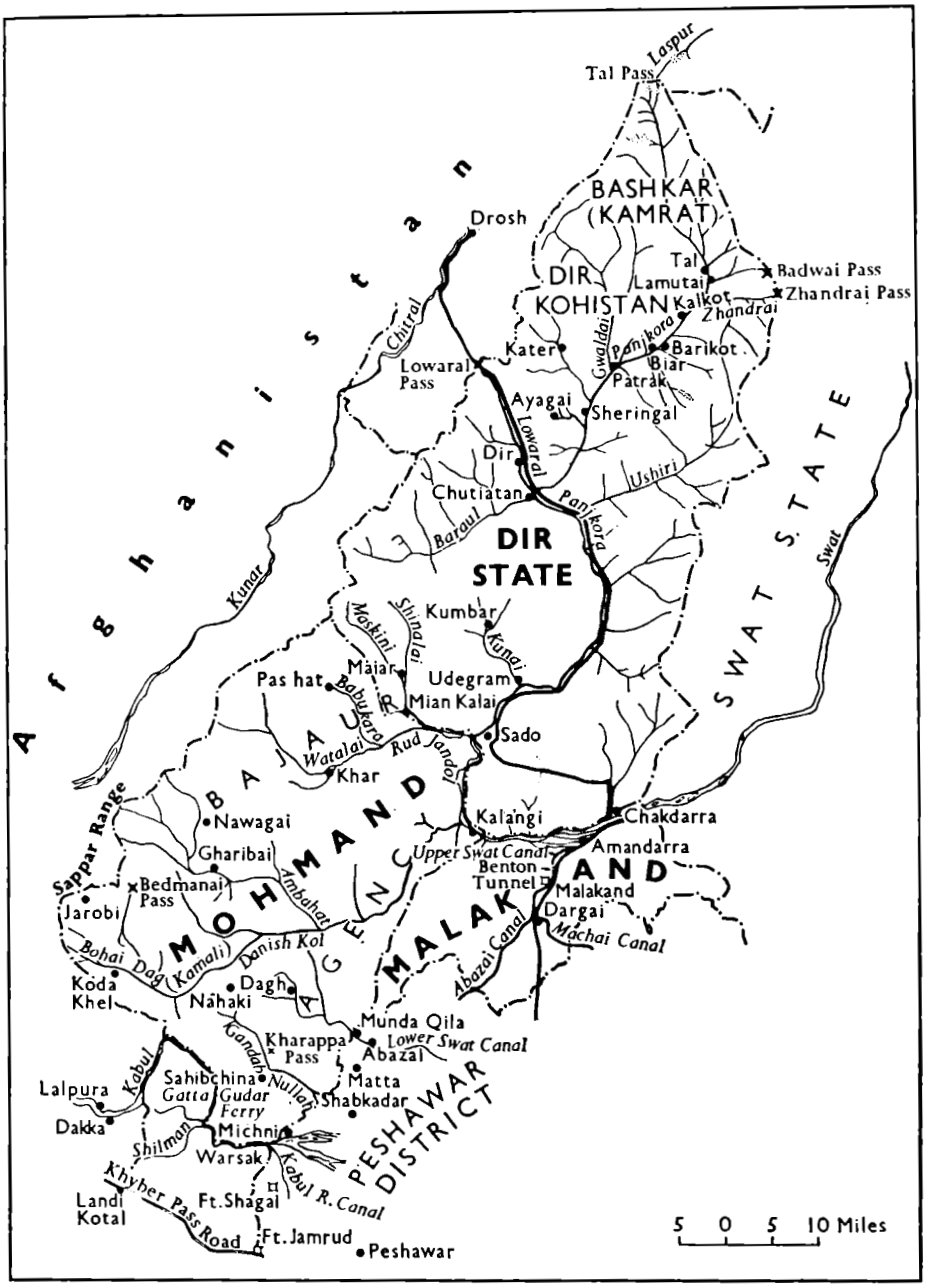

Fig. 10. Dir State, Mohmand Agency, and Malakand Protected Area

Sir Mortimer Durand in 1893. The 'Durand Line', as it came to be known, literally cut the Mohmand (Bar) people in two, severing the tribal people of the Mohmand hills from their brethren settled in the Kunar and Jalalabad valleys who then came under the official sovereignty of the ruler of Afghanistan.

Besides the Mohmands the only other main tribal groups inhabiting the Agency are the Bajauris (also known as Tarklanris) in the extreme north, who extend into Dir State as far as the Kunar River, and the Mullagoris and Shinwaris who were pushed out of the Shilman country by the Mohmands into an area just north of the Khyber. The Bajauris are a people closely related to the Yusufzai and consist mainly of a number of sections collectively called the Mamunds.[75] The Bar Mohmands themselves consist of four main clans: (1) the Tarakzai, who inhabit most of the southern portions of the Agency from near Fort Michni all the way to Dakka on the Kabul River; (2) the Halimzai, who mainly live in the Gandab valley and the central section (Kamali) of the Bohai Dag valley; (3) the Baezai, the largest and most powerful division who reside in the most westerly parts of the country; and (4) the Kwaezai, who extend from settlements on the Kunar eastward over the mountain watershed into large areas of the Bohai Dag.[76]

The Agency itself has an area of 750 square miles with a population estimated at 250,000 people. With regard to location, its southern limits are contiguous with the Kabul River, while its eastern portions can be said to be the limit of the hill country overlooking the Peshawar Basin. Northward it borders with Dir State roughly along the Jandol River and its main tributary the Maskini, and in the west, with the exception of the Sappar range, a natural water-parting between the Panjkora and Kunar, the boundary is based on the politically instituted 'Durand Line'.

As the physiography and the lack of vegetation testify, the Agency is, for all intents and purposes, a desert tract. Although no statistics are available it is thought to have a general rainfall somewhat less than that of Peshawar which is around 13 inches per year. More important climatically, however, are the drastic extremes in temperatures this region experiences. Shade temperatures in the hot season frequently exceed 110 degrees Fahrenheit. Such few miserable settlements (usually of a fortified nature) as are found scattered throughout the Agency are restricted almost entirely to those valleys where water can be derived from surface drainage, natural springs, tanks or wells, and the last are never less than 100 feet deep. Potable water is even scarcer

[75] Douie, James, *op. cit.*, p. 306.
[76] Houghton, F. A., *op. cit.*, p. 1.

and generally must be carried over long distances, usually by mule, from springs often of questionable reliability. With the exception of favoured parts of the Gandab and Kabul valleys, agriculture here is largely dependent on the winter and autumn rains; should these fail great hardship ensues. Some experts on the Frontier suggest that times of maximum tribal unrest can be directly correlated with these periods of hardship; an idea well worth substantiating in any future tribal development plans. Even under the best natural conditions, however, the hill country of the Mohmands has not been able to support the natural increase of the population. There is thus a steady emigration either to the Peshawar Basin or else to comparable areas in Afghanistan. The emigrés generally maintain their connections with their relatives in the tribal area, and their remittances to their native homes in cash and kind constitute a very important source of income to this otherwise deficit area. Furthermore, some tribesmen from the Agency seasonally migrate to the settled areas, particularly in winter, to work in agricultural and other forms of manual labour.

At best agriculture, and indeed the entire economy, can be characterized as operating at a subsistence level. A little grain is grown in the exceptionally favoured valley areas and some animals are kept, but as a whole the region depends most on the profits derived from the transport of goods on locally owned mules, donkeys and camels to and from the trade centres of the Peshawar lowlands and the Jalalabad and Kabul River valleys. The routes through the Mohmand country from Peshawar City to Dakka (thence to Kabul) are probably the most important. One leads from Fort Shagai (just north of Jamrud Fort) via the Tartar and the Shilman valley, while another goes from Fort Michni across the Kabul River by the Gutta Gudar and Shanilo ferries into the Shilman valley. Other roads suitable for trade by animal caravans extend up the Gandab valley from Shabkadar (in the Doab of the Swat and Kabul Rivers) and another from Matta via the Pandiali valley. These latter routes continue into the heart of the Mohmand country from which other tracks extend into the Kunar valley via the Bohai Dag.

Although rock specimens have been collected in the Mohmand territory which contained 90 per cent. copper, no effort has been made either to ascertain the extent of such deposits or to carry out any large-scale exploitation.[77] Other minerals known to exist in the area include mica, asbestos and silicate. For some time local resources of iron have been worked by the tribes of Bajaur in connection with the making of

[77] Gel, E. R., 'Report on the Mineral Resources of N. W. India' (*Records Geological Survey of Pakistan*, Vol. I, Part 1,), p. 10.

crude guns and agricultural implements, but again tribal pressure has prevented any scientific surveys from gaining access to the country in order to determine the value and extent of the deposits.

As in Dir, Swat and Chitral, the tribes of the Mohmand country are inclined to leave all power vested in their local Khans and chiefs rather than seek to preserve their own individual rights like almost all of the tribes further to the south.[78]

In Bajaur the situation is even more extreme. The whole area is divided up into a number of small units entirely controlled, politically and administratively, by a local Khan. Even the "jirga system"[79] does not apply in Bajaur, the Khan being the sole arbiter in all matters as long as he is able to maintain sufficient power. As one might expect under such conditions, existing animosities between Pakistan and Afghanistan have been augmented by these tribal leaders in an effort to consolidate their own power and authority.

Whether any causal relationship exists in this matter based possibly on geographical factors, has yet to be determined. As for the authority of the Central Government, whatever control they manage to exercise among the Mohmand tribes is usually exercised through the Political Agent based in Peshawar by direct contact with the tribal jirgas.

MALAKAND PROTECTED AREA

As its name implies this administrative division was created by the British solely for the purpose of controlling firmly both sides of the important Malakand Pass (Fig. 10). Standing only 2,850 feet high and reached by a mild gradient, the Malakand, even today, provides the only really easy overland access from Central Asia (via the Dorah, Baroghil, and Shandur Passes), through the entire northern arc of mountains, stretching from Chitral to Assam, into the sub-continent proper. Although the British had been operating against Pathan tribes near the Malakand as early as 1852,[80] it was not until the year 1895, in accordance with the policy of maintaining good road connections between India and Chitral, that a strong post was established on the Malakand Pass and at Chakdarra. So importantly did the Malakand figure in imperial strategy at this time, that it was the only area on the entire Frontier to come under the direct control of the Government of India rather than the local Punjab Administration.[81]

[78] Singh, Bhai Lehna R. B., *Census of India 1921, Vol. XIV, NWFP* (Peshawar: NWFP Government Press, 1922), Tribal Section.

[79] A tribal council composed in this case of the leading Khans.

[80] Paget, W. H., and Mason, A. H., *op. cit.*, pp. 198–9.

[81] Davies, C. C., *op. cit.*, p. 24.

By 1904, when the immediate threat of a supposed invasion by 3,000 Cossacks over the Dorah or Baroghil Passes had diminished, Lord Curzon had initiated his new 'closed-border' system. Including all of the Frontier from Chitral to Baluchistan, this policy involved the withdrawal of British and Sepoy troops from advanced positions in the independent tribal areas and their replacement by large numbers of loyal (at least hopefully so) British-officered tribal forces. These native levies were supported by highly mobile regular elements of the Indian Army stationed at strong points on the edge of tribal territory. Forts, particularly the one established at Malakand, took on added importance and became the essence of British strength on the Frontier. To ensure better communications with Malakand, the fort was linked at this time with Peshawar and Rawalpindi not only by an excellent metalled road, but up to Dargai (at the southern base of the pass) by a railway line as well.

The strategic significance of the Malakand Protected Area is further enhanced by the fact that it controls all of the power-generating establishments connected with the Malakand Hydro-Electric Scheme. At a place called Amandara some 5 miles north-east of the pass, water is siphoned off from the Swat River by the headworks of a canal system collectively known as the Upper Swat Canal. This canal flows under the Malakand just near the fort through the so-called Benton Tunnel. By means of this tunnel a minimum flow of 1,000 cubic feet per second is secured from which a head of 50 feet is capable of developing 16,000 kW. continuously.[82] This power is transmitted to grid sub-stations located in Mardan, Nowshera, Peshawar, and Charsadda. Just below Dargai Fort, the Upper Swat Canal divides into two branches. One, the Abazai Branch, irrigates mostly Charsadda Tahsil and areas to the west up to a point some 9 miles east of Fort Abazai, where at Munda Quila the Lower Swat Canal begins. The other and much more important branch of the Upper Swat Canal, the Machai Branch, proceeds eastward past the village of Machai (just south of Rustam). Near Swabi it splits into 3 sub-branches, the Pihur, Indus, and Maira branches, all of which irrigate a considerable portion of Mardan District.[83]

In the 'Protected Area' the indigenous tribal system functions with the advice and support of the Political Agent, who also uses the Malakand as his base for administering the other 'independent' states of Dir, Swat, Chitral and the Mohmand Agency.

[82] Qaiyum, A., *Gold and Guns on the Pathan Frontier* (Bombay, Hind Kitabs, 1945), p. 63.

[83] Coulson, A. L., 'The Underground Water Supply of the Peshawar and Mardan Districts of the NWFP' (*Rec. of Geol. Surv. Ind.*, Vol. 74, 1941, Calcutta), p. 252.

Most of the Pathans living in the area are either of the Utmanzai or Ranizai clan, and as one might expect are closely linked with both their Mandanr Yusufzai neighbours in Dir and Mardan District and the Yusufzai in Swat.

Apart from those tracts in the vicinity of Chakdarra and westward almost to Kalangi which are irrigated directly from cuts in the Swat River, and the southern portions which are an outlying part of the rich Peshawar Basin and serviced by the Upper Swat Canal, the Protected Area for the most part is composed of rugged mountainous wasteland. In the braided Swat River flood plain rice is particularly favoured for cultivation, whereas in the lowland areas south of Dargai numerous crops are grown characteristic of the rest of the Peshawar Basin. With the exception of protected areas such as are found along government canals, where a limited amount of Shisham grows, and except for some fruit trees in and around Malakand Fort, the entire area is practically devoid of any forest cover.

Besides serving as a base for military forces charged with keeping the peace in this region, the Malakand with its important railhead at Dargai also acts as a valuable trans-shipment point. This is especially true for bulk items like timber and grain which funnel down to Dargai, particularly from Swat State. The Malakand also serves as an effective check point by the Central Government on all overland vehicular traffic moving into and out of the region.

HAZARA DISTRICT

General Setting. Of all districts to the north of the Gomal, Hazara is the only one which offers an easy transition, both physically and culturally, between the Frontier and the Punjab. In the south the sub-montane tracts of the Khanpur hills gradually fuse with the Punjab Plain, and ethnically little difference can be detected between the Hindko-speaking[84] non-Pathan people of Haripur and their Punjabi brethren in the vicinity of Rawalpindi. On the other hand, the wild and rugged Black Mountain area in the north-western part of the district, inhabited by such fierce Pathan tribes as the Hasanzais and Chagarzais, is scarcely different in character from any other independent tribal area on the Frontier. Somewhere in the vicinity of the Pakhli Plain it is thought these extremes merge, and from the variety of tongues and physical descriptions noted in Mansehra, it would seem that this is so.

Hazara's role as a transition zone can largely be considered a function of its unique geographical position. It is the only frontier district

[84] Closely related to the Punjabi language.

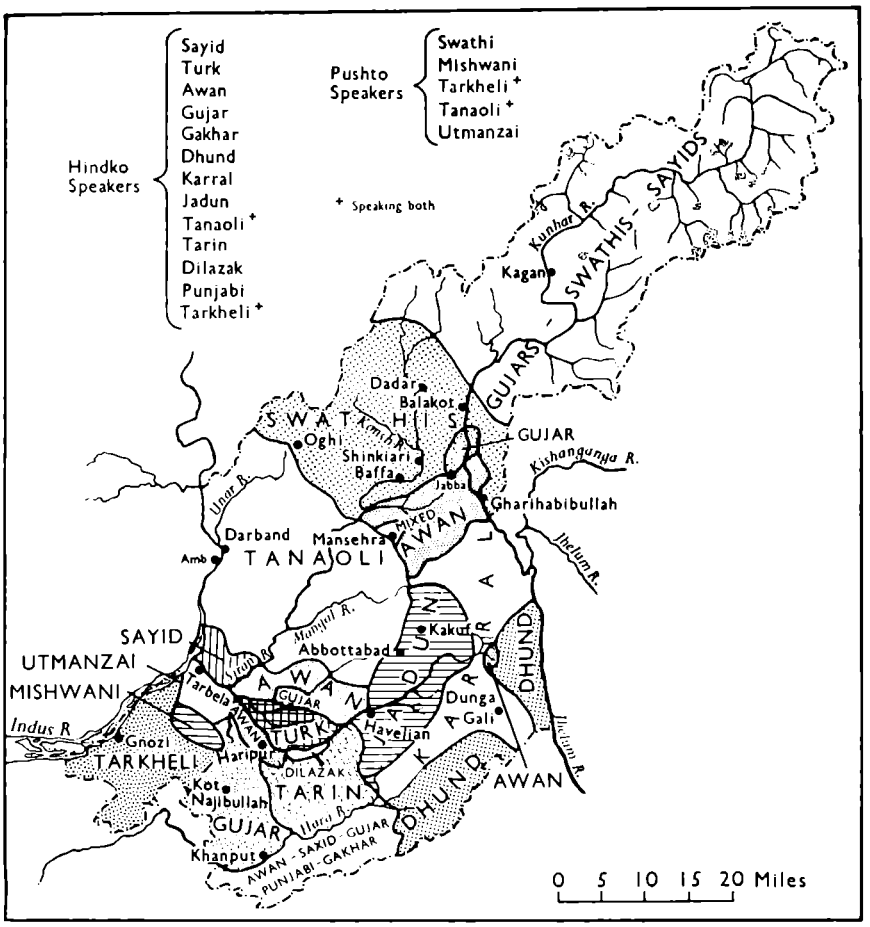

Fig. 11. Hazara District: Tribal Distribution

which lies to the east of the Indus River. From Peshawar District to Chilas the western border of Hazara is fringed by a number of independent hill tribes, inhabiting a maze of formidable hills and narrow valleys that drain into the Indus.

For some inexplicable reason the NWF has always exerted a strong pull on the preponderantly non-Pathan people of this district; (the proportion of persons speaking Pashto is only 5 per cent of the people),[85] in spite of the fact that a large proportion of the Hazara population, i.e. Swatis, Dilazaks, Sayyids and Tanaolis, are 17th and 18th century refugees, fleeing before the Yusufzai Pathan invasions of Swat and Buner. Evidence to this effect can be noted from the conclusions reached by a Central Government Commission which visited

[85] Mallam, G. L., Census of India, 1931, *N.W.F.P.* Vol. XV (Peshawar, N.W.F.P. Govt. Press, 1932), p. 5.

Hazara about 10 years ago. In trying to ascertain whether or not Hazara should be disassociated administratively from the N.W.F.P. they interviewed a large number of the district's most educated and informed citizenry practically all of whom were non-Pathan in origin. The opinions they heard were almost universally in favour of the district retaining its formal ties with the then N.W.F.P.

Historical Background. Like most districts on the Frontier, Hazara in the course of its history has changed hands many times. From the latter half of the eighteenth century and at the beginning of the nineteenth it was administered by the Durranis of Afghanistan, but Afghan rule gradually weakened and by 1818 had been replaced by that of the Sikhs. British influence began in a characteristic way in 1846 at the close of the Sikh wars when Captain James Abbott, who at the time was engaged in settling the boundary between the Punjab and Kashmir, received a deputation from the tribes of the Haripur Plain who implored the British to intervene and prevent their coming under the domination of the cruel Hindu-Kashmir Maharaja.[86] The area was brought under British control in 1849 and, on partition of the sub-continent, passed under Pakistani control.

Method of Analysis. In analysing Hazara and other 'settled' districts of the Frontier about which there is a considerable amount of statistical information available, it was found through experience that the best results could be obtained by working mainly with data put out by the various district revenue departments. In particular the assessment of land revenue, based on the average value of the net assets of the unit under assessment, was found quite useful. In this case the units are called assessment circles. These are prescribed through the different settled districts generally on the basis of fairly well-defined physical divisions. In Hazara there are 22 such circles grouped into five principal tracts: irrigated and unirrigated plain tracts, the country at the base of hills and on the edge of the plain, the lower hills and the valleys in between, and lastly the higher hills and valleys.

The approximate location of the Assessment Circles and the types of land they command in Hazara District are as follows:

[86] Khan, K. I., *Final Report of the 3rd Regular Settlement of the Hazara District* (Peshawar, Manager Govt. Printing and Stationery Office, N.W.F.P., 1953), p. 8.

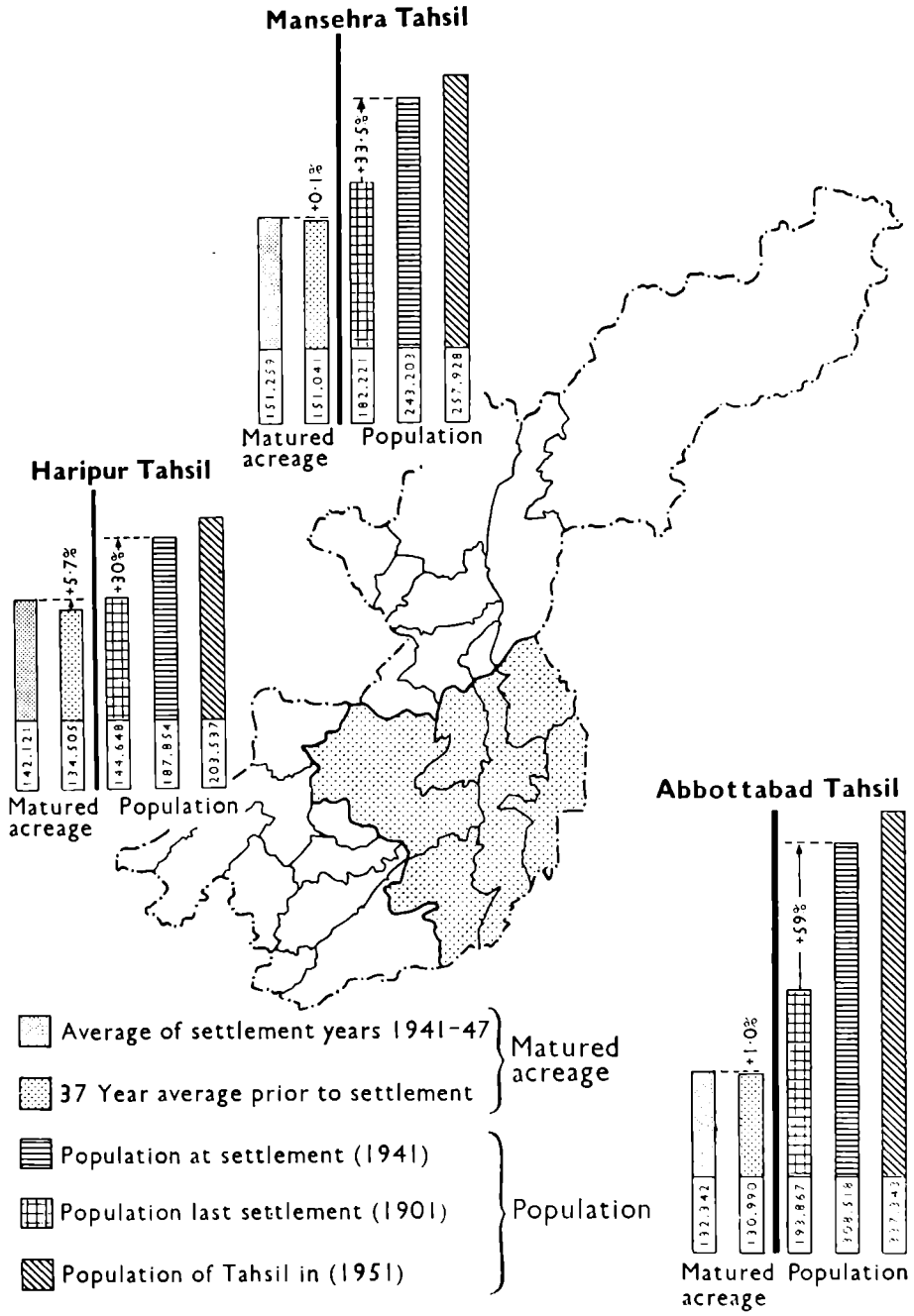

Fig. 12. Hazara District: Increases in Matured Acreage and Population

1st Group: Irrigated Circles consisting of Plains Land:

	Classes of Land	*Description*
HARIPUR	Abi I	Upper irrigated portion of the Haripur Plain
	Abi II	*a.* N.W. portion of Haripur Plain receiving tail end of the Dor irrigation
		b. Country between (*a*) and the Indus watered by the Siran
		c. Khanpur Panjkatha
	Khari	Strip of land along the Indus facing Swabi Tahsil
MANSEHRA	Maiden Pakhli	Most level portion of the Pakhli Plain

2nd Group: Unirrigated Circles consisting of Plains Land:

HARIPUR	Maira	Level expanse of maira soil at lower end of Haripur plain between the Gandgar and the Khanpur hills
ABBOTTABAD	Rash	The plains area around Abbottabad and its northern extremity the Mangal tract
	Dhangar	N.E. end of the Dor plain deriving its name from the bad stony soil

3rd Group: Circles consisting of country at base of hills and on edge of plains:

HARIPUR	Kandi	Word 'Kandi' itself means land lying at the base of hills

	Classes of Land	*Description*
MANSEHRA	Pakhli Kandi	Both circles in this group consist of a disjointed collection of villages, Pakhli plains mostly surrounding Haipur and 'maira' land scored by ravines and sloping gently towards the plains

4th Group: Circles consisting of the Lower Hills and the valleys in between :

HARIPUR	Gandgar Dhaka Khanpur	Tracts formed by the Gandgar and Khanpur hills
	Badhnak	That portion of the Tanawal hills which lie within Haripur Tahsil between Indus Sirain including the level 'Kulai'
ABBOTTABAD	Tanawal	That portion of the Tanawal Hills lying within Abbottabad Tahsil
	Nara-Lora	Country traversed by the Dhund and Karrall 'Harrohs' and by the Nilan stream
MANSEHRA	Pakhli Gharian	Northern portion of the Tanawal hills lying within Mansehra Tahsil
	Kunhar	Valley of the Kunhar River between where it emerges from the Kagan glen at Balakot and where it enters Abbottabad Tahsil

5th Group: Circles consisting of higher hills and valleys:

	Classes of Land	*Description*
ABBOTTABAD	Dhaka	'Dhaka' meaning hilly country is name given to tract immediately to the west of the Dunga Gali range in which Dor and Hara Rivers originate
	Boi	Tract between northern portion of Dunga Gali and the Kunhar
	Kakot	Tract between southern portion of Dunga Gali and the Jhelum
MANSEHRA	Konsh-Bhogarmang	Comprises 2 valleys of Konsh and Bhogarmang to the north of Pakhli plain
	Kagan	Includes greater part of the valley of that name for 96 miles up to Chilas border—roughly a quarter of entire district but with a relatively small area given over to cultivation
	Agror	Formed by the Agror valley to the west of Pakhli

Because of the relatively large number of these assessment circles and the fact that detailed statistics of fairly recent origin are available on each, it was possible to construct a series of maps of Hazara by which regional associations could be effectively evaluated. In some cases, as in Peshawar and Mardan districts, where a more detailed analysis of land use was sought, recourse was made to the 'Patwaris' maps. These are the official maps used in the calculation of the amount of revenue to be realized in the various assessment circles. It should be noted here that land is assessed at a rate in direct proportion to its fertility. Assessments are carried out on the average only once every forty years, as they entail an enormous amount of work.

For ease of administration all of the settled districts have been

subdivided into units locally called 'Tahsils'. In Hazara there are three: Haripur, Abbottabad and Mansehra. The whole District is in charge of a Deputy Commissioner (D.C.), who resides at Abbottabad, with assistants at both Haripur and Mansehra. He in turn is responsible to the Commissioner of the Peshawar Division with headquarters at Peshawar.

On the whole this administrative structure works fairly well, especially at the level of the D.C., in whose office is vested, as in British times, a vast amount of power. Bureaucracy and 'red-tape' are rampant, however, at every other level. This is very often reflected in the unwillingness of government officials to shoulder on their own initiative any sort of responsibility which could be deemed in excess of their normal duties. This condition, it should be pointed out, was found to exist under much the same conditions in all the other districts.

Mansehra Tahsil. Protruding like a tongue into the mountainous wastes of the upper Indus basin, and separating the territory of Kashmir from that of Indus Kohistan is Mansehra Tahsil. Beyond the important Babusar Pass, where the Kunhar River begins its 110-mile course through the tahsil, lie Chilas and the remote regions of Dardistan. Connecting the Shandur Pass and the Hunza valley via Chilas and Gilgit, the Kunhar River route always figured prominently before World War II as an important avenue of trade between Central Asia and the swarming bazaars of the Upper Punjab.

In this largely mountainous tahsil (the total area of which is 1,449 square miles) only 16 per cent. is available for cultivation, and with a climate intensely cold in winter and to a certain extent shut off from the rain-bearing monsoon in summer, it is understandable that agricultural practices here vary considerably from other parts of the district. Because the greater part of its area, i.e. roughly north of Mansehra City, is above 7,000 feet in elevation, only the Kharif crop is possible for cultivation. Deep snow covers vast portions of this northern area during much of the winter season. The importance of Kharif in all but the Pakhli Circles is evident in the fact that maize[87] occupies more than 65 per cent. of the total matured acreage.[88] Although the proportion of land under irrigation is no more than 20

[87] Maize, or American Indian corn, is by far the most important Kharif crop, just as wheat is overwhelmingly the most significant rabi crop along the entire Frontier. As a late arrival to Asia from the Americas, and a crop which gives yields far in excess of any other crop requiring similar growing conditions, it seems worth while speculating on the influence this single crop has had on population growth.

[88] Since crop failures are so frequent on the Frontier, Government statistics differentiate between the planted acreage and the acreage that actually matures.

per cent. to 25 per cent. of the total cultivated area in any one circle, the importance of irrigation in Mansehra in terms of increased yields should not be underestimated in spite of the limited scale on which it is practised. In the Pakhli plain, for example, irrigated tracts of rice frequently yield 40 maunds/acre.[89] The influence irrigation has had on settlements in the lower Kunhar valley is equally obvious. In this section below Balakot, settlements have tended to coalesce around a series of alluvial fans and their attendant irrigated terraces.

In Kagan, on the other hand, which includes that portion of the Kunhar catchment area from Balakat to Babusar, a similar map study points to a more dispersed form of settlement in spite of a higher intensity of irrigation. This is understandable in view of the fact that only 3 per cent. of the circle's 800 square miles is under cultivation.

Taking advantage of the lush summer pastures which cover vast stretches of the Kagan, Kunhar and Konsh-Bhogarmang circles, are the 300,000 or so semi-nomadic Gujar, Swatis and Sayyid herdsmen and shepherds. Moving out late in May after sowing a crop of maize in their isolated valley settlements, groups of families make the gradual trek, as the season advances, to the higher meadow lands with their cattle, sheep and goats, leaving behind only a few of their people to give nominal attention to the kharif crop. The groups return to their tiny scattered hamlets in September when it is harvest time. Although some animals are taken to lower grazing grounds in the winter, the majority are stall-fed from October to May. In the absence of a rabi crop, a judicious use of manure has enabled the people of this northern mountainous zone to achieve some of the highest yields of maize on the Frontier. In Konsh-Bhogarmang and Agror yields of 50 maunds to the acre are not unknown.[90]

Stretching westward to the Indus from the Kunhar valley are a series of parallel ridges which follow the general north-east–south-west strike of the country. These divide the Bhogarmang and Konsh valleys which comprise the upper portion of the Siran system (they also constitute the circle of the same name), and the Indus-draining Unar valley of the Agror circle respectively. South of the Pakhli plain the ridge-like country dissipates into a confused mass of hills 5,000–6,000 feet high which are in their most evident form in Tanawal.

Cultivation in this area is limited to the main valleys and in some cases to small isolated plains like that of the Chattar at the head of the Konsh valley. In general, however, most settlements are concen-

[89] Tollington, H. P., *Assessment Report of Mansehra Tahsil* (Peshawar, Govt. of India Press, 1944), p. 26.

[90] Tollington, H. P., *op. cit.*, p. 19.

trated in the southern zone adjoining the Pakhli plain, where it is warm enough to cultivate both a kharif and a rabi crop. Although included as a hill circle largely because its overall elevation precludes double cropping, more than half the cultivated area (which is about half of the entire circle) of Agror is classed as plains. The L-shaped Unar valley is especially fertile in the vicinity of the administrative centre of Oghi. A peculiar form of land tenure still existing in some of the more remote parts of this and adjoining regions is the practice of 'vesh'. This involves a periodic redistribution of land between individual members of the tribe, which, in the case of two of the 18 Swathis clans still using the system, takes place every three to five years. The aim of this ancient system was to allow every member of the group to enjoy the best land for some time and to prevent development of leadership based on economic power. In village communities today vesh is proving impracticable since no man is willing to make any permanent improvement to his piece of land by, for example, planting fruit trees or terracing as long as he knows he can expect to lose it in a few years' time.

The ridge separating the Agror circle from the independent tribal lands which extend down to the Indus has a unique place in Frontier history. Known as the Black Mountain because of the thick dark fir forests that cover its 8,000 feet slopes, it marks the boundary between the administered area of Hazara and the homeland of a confederacy of fierce Yusufzai tribes numbering well over 125,000. Although these tribes have a reputation for religious fanaticism, it is hardly likely so many military expeditions would have been sent against them had not the British known that they could successfully be 'taught a lesson'. Davies contrasts operations in the Derajat with those waged against the Black Mountain tribes by calling attention to the physical isolation of this area and the fact that it commands no important passes or trade routes.[91]

Occupying the base of the tahsil are the three Pakhli circles. As their names imply, they include the land associated with the fertile Pakhli Plain, and all have more than half of their total area under cultivation. Double cropping is carried on throughout the area and both wheat and maize are almost equally important. Irrigation is concentrated in Pakhli Maidan because of a large riverain area of rice cultivation, and is especially intense where the heavily silted Siran first debouches on to the plain. Cultivation is also heavy along the Ichar, a tributary of the Siran, which drains the area just to the north of Mansehra city. Most of the local irrigation carried on in this area is

[91] Davies, C. C., *The Problem of the NWF 1890–1908* (Cambridge University Press, 1932), p. 76.

by 'kathas' or water channels which are taken from the river by placing a barrier of stones across its flow.[92]

Commanding as it does jeepable roads to the Kagan (Babusar Pass), and to Indus Kohistan via Oghi, and a metalled road to Kashmir via Garhi Habibullah, Mansehra is undoubtedly the most important centre of communications in the entire district. At the time of the fighting in Kashmir it was an important base for tribesmen who had filtered in from all over the Frontier to do battle 'on behalf of their Muslim brethren under the Hindu yoke.'

Abbottabad Tahsil. The middle position in this district is occupied by the 32 by 30 mile tahsil of Abbottabad. Its main physiographic features are: (a) a forest-clad mountain chain along its eastern flank overlooking the Jhelum River; (*b*) a central lowlands broken by the Sirban ridge and (*c*) the disorderly network of hills of Tanawal. Linked with the high Kagan ranges to the north and the Murree hills to the south, the eastern highlands compose more than one half of the tahsil's entire area. Their ruggedness and high elevation mean that little if any rabi can be grown and there are no facilities for irrigation. The fairly heavy density of population per square mile of cultivated land indicates that cultivation is limited to a few favoured places.

These highlands form the watershed between the Indus and the Jhelum Rivers, and consist of a chain of ridges which in different sections are called by such names as Thandiami, Miranjani and Dunga Gali. Hemmed in between these main ridges and the deeply entrenched valleys of the lower Kunhar and Jhelum are the practically inaccessible hill circles of Boi and Bakot. Since the drop to the valleys of the Kunhar and Jhelum is very abrupt (about 6,000 ft.) the streams run in gorges too deep for irrigation. Erosion is greatly facilitated in these hill circles during the summer season since they lie athwart the main monsoonal currents of air. Precipitation on the higher slopes often exceeds 50 inches in a year.

One sign of the inferiority of the soil in this hilly zone is the fact that pulses occupy 17 per cent., 15 per cent. and 17 per cent. of the total matured acreages of the Dhangar, Bakot and Boi circles respectively. This crop, it may be added, is what might be called a last resort crop; that is, when everything else fails the peasant farmers will resort to growing pulses. Here it reaches the highest percentage of crops grown in the district.

Dhaka circle covers the western slopes of this mountain backbone down to the edge of the Rash plain. The fact that cultivation takes

[92] Hussain, M., *A Socio-Economic Survey of Village Baffa* (Peshawar, Board of Economic Inquiry, Peshawar University, 1958), p. 55.

place at anything up to 8,000 feet means that rabi crops account for only 11 per cent. of the cropped area in the circle.[93] There is little level land available for cultivation, but as the area is reasonably accessible from the plain tracts, the peasants are able to derive a considerable amount of their income from the goods and services they provide to the numerous hill stations which come to life in these cool highlands during the summer.

The Rash plain is generally thought of as an extension of the Pakhli plain which lies immediately to its north. It has an undulating surface heavily dissected by a number of streams which in the northern section (Mangal tract) drain into the Siran and in the central and southern areas to the Dor. Structurally the Rash plain is thought to be the remnant of a former basin; the fact that settlements are generally restricted to the periphery of the plain because of waterlogging, and the marsh areas in the centre would seem to support this contention. Until twenty years ago cultivation in this tract was limited mainly to a single crop of maize, the soil being too damp to permit wheat to mature fast enough for it could be grown in rotation with maize. Recent drainage operations have now reduced the water-table so that wheat and other rabi crops are now gaining steadily in the total acreage. This has largely been brought about by the tremendous rise in population of Abbottabad City and its cantonment areas, which now completely dominate the southern part of the basin.

Although unirrigated soils comprise 93.6 per cent. of the total cultivated land[94] in the Rash plain, population pressure on the land is still intense enough to push the number of people inhabiting a square mile of cultivated land far above that of any other circle in the district. In order to satisfy the needs of such a large urban concentration (roughly 50,000 people in 1959) a considerable amount of potatoes and other vegetables are grown, in addition to the normal grain crops. Grass and other forage are severely restricted in this tract.

Abbottabad city is the administrative centre for both the tahsil and the district. Located here, in addition to the Deputy Commissioner's office, are the District law courts, revenue and irrigation departments. The Pakistan military academy at Kakul constitutes one of the largest single military establishments on the entire Frontier. In Dhangar circle, south of the Sirban ridge, there is a sharp drop to the lowlands of the upper Dor, whence the Dor valley gradually

[93] Tollington, H. P., *Assessment Report of the Abbottabad Tahsil of Hazara District* (Peshawar, Manager Govt. Printing and Stationery N.W.F.P., 1949), p. 10.

[94] Elahi, M. K., and Kureishy, K. U., 'Agricultural Land Use Survey Nawan Shahr (South), Abbottabad' (*Pakistan Geographical Review*, Vol. XIV, No. 1, 1959), p. 38.

widens and levels out as the river flows south-west towards Haripur. The soil in this lowland is characteristically sandy and full of stones, producing crops little better in quality and quantity than those raised in the poorest hill soils. Thus, the percentage of land under pulses and other inferior crops may run as high as 30 per cent. in many areas of the circle. The important railhead of Havelian is located in the northern part of the circle. Goods coming from the Punjab and Peshawar are re-loaded there and taken by truck to Abbottabad, Mansehra and areas in the disputed zone of Kashmir.

The low hills of Tanawal lie to the west of the central lowlands. A broad central backbone ridge stretches diagonally across the area separating the Mangal nullah from the Dor and dividing the circle into an upper and lower Tanawal respectively. Level land is the exception here, save in the south where the region merges somewhat with the Haripur plain. Rani and maize occupy about equal areas of cultivation with considerable space being given to such 'inferior' crops as barley and pulses. The poverty and population pressure in this circle are further indicated by the large numbers of people who have either emigrated or else have entered the army or police service.

Nara Lora circle is a subdued continuation of the hill circles to the north of it. It is drained by the shallow and silt-depositing Nilan River which is one of the main tributaries of the Haro. About 1,500 feet above the Nilan is the broad Nara ridge which continues south-westward as the Khanpur range.

Haripur Tahsil. Although it has a more unified hill alignment along its western margins, Haripur tahsil is essentially of the same physiographic make-up as Abbottabad tahsil—a high eastern side which is a continuation of the Dunga Gali, and central lowlands of the Dor River, all of which maintain the characteristic north-east–south-west strike.

The height of the Khanpur hills is clearly reflected in the emphasis that is given to maize over wheat. This is in complete contrast to the rest of the tahsil where lower elevations and warmer temperatures enable wheat to gain considerably more of the total matured acreage. The general character of this area consists in a series of ridges from 3,500 to 6,000 feet high interspersed with a number of long narrow valleys associated with the Haro River system. Where these streams have developed flood plains, as in the case of the Panjkatha (Haro) and the Nilan, there is extensive cultivation.

By far the most valuable tracts in the tahsil are the two Abi circles which include all of the land associated with the Haripur plain, where

about 14,000 acres of land are irrigated. Towards the western end of its 30-mile course between the Nara and Khanpur hills on one side and the Tanawal and Gandgar hills on the other, the plain of the Dor is broken up by a number of deep ravines. By the time the river joins the Siran just before they drain into the Indus at Tarbela, it is running in a steep-sided ravine.

Haripur city occupies a central position in the extensive plain of the Dor. Of all the main cities in the district it best fits the description of a market town, especially in its relation to the district's external trade. Sheep, goats, cattle, ghee and fruit, etc., are collected here from all parts of the district for easy shipment by rail or truck via Hassanabdal, Attock or the boat bridge near Tarbela to the urban centres of Rawalpindi, Murree, Peshawar, Mardan and points beyond. If the Kashmir dispute were settled and the railway extended to Garhi Habibullah, Haripur could easily revert to its former position as a trade entrepôt for Kashmir.

Badknak circle is a continuation of Tanawal, and is therefore characterized by a confused maze of hills between 3,000 and 4,500 feet high criss-crossed with deep nullahs and ravines. Such little level land as there is in this section is confined to isolated valley bottoms. There is, however, a fairly significant plains area between these hills, their continuation further south (the higher and more regular Gandgar range) and the River Indus. This is called the Kulai, and though it is narrow north of Tarbela it widens out sufficiently farther south to enable a certain amount of irrigation, based on cuts from the Indus, to be carried out.

Summary. With an assured and adequate rainfall, a relatively invigorating year-round climate, a fairly sizeable area of fertile plains land, and the most significant forest resources in the entire Frontier, Hazara undoubtedly has a potential exceeding practically every other district in West Pakistan. For some reason its development has long been ignored by the Central Government, and even now the only really big development scheme envisaged in the district, i.e. the Tarbela Dam,[95] is concerned almost entirely with the lower Indus valley.

[95] Tarbela Dam from *The Pakistan Times,* 19 September 1960, p. 5.—The Tarbela Dam (15 miles from Haripur) is to be a rockfill dam, nearly 2 miles long at the crest, with a maximum height of 350 feet. When completed Tarbela will be one of the largest rockfill dams in the world, having a total fill of nearly 100 million cubic yards. The reservoir will be 25 miles long and will have a storage capacity of 5.1 million acre feet. It will submerge 34,000 acres and involve the dislocation of 40,000 people living in 66 villages (including Tarbela itself). Provisions are in this scheme to raise the height of the dam another 110 feet in the future, thereby increasing the total storage capacity to 8 million acre feet and a potential power plant of 1.1 million kilowatts.

Instead of making significant headway in developing its resources and improving living standards, the district seems, if anything, to be falling behind. This is especially so with regard to the population-crop production ratio. The pressure on the soil over the past forty years has become so intense that Hazara is now exceeded only by Peshawar district in this respect. In view of Peshawar district's larger urban concentrations and its vast fertile plains area serviced by an efficient complex of canals, the situation as it now stands in Hazara would seem even more menacing. There is concrete evidence of the district's predicament: the population in the past forty years has jumped about 40 per cent.; the amount of acreage maturing has only increased by 2.2 per cent. (Fig. 12). Such an increase in population accompanied by no similar rise in the amount of land being brought under cultivation necessarily means that the district can soon expect to experience the multitude of problems associated with land fragmentation. This is clearly revealed in the statistics indicating the number of ploughs (in Abbottabad tahsil) per 100 acres of cultivation. In 1901 there were 15 ploughs per 100 acres of cultivation; in 1941 there were 18. This represents a 20 per cent. increase in the number of holdings while the area under cultivation remained practically stationary.[96]

The District suffers from an advanced state of deforestation, which is all the more deplorable when one considers that substantial parts of it were once completely forested, and that manure, which should be used to improve crop yields, is burned in much the same manner as it is in the vast treeless plains of northern India and the Punjab of Pakistan.

What makes conditions here so much worse is the fact that deforestation is not just of recent origin. In Haripur tahsil, where heights rarely exceed the lower levels of Abbottabad tahsil, the forests, as one might expect, are practically non-existent.

So much could be done to improve conditions in Hazara that it almost defies description. What is needed most is a vigorous programme which would ensure that the region's basic resources were properly exploited.

Feudal Tanawal and Adjacent Tribal Areas. Adjoining Hazara along most of its western margins is a tract of land inhabited by a number of independent tribal groups. Occupying almost all of the vast area north and east of the Chattar Plain are isolated pockets of little-known Kohistani people; south of the Chattar and west to the Indus is the

[96] Tollinton, H. P., *Assessment Report of the Abbottabad Tahsil of Hazara District* (Peshawar, Manager Govt. Printing and Stationery N.W.F.P., 1949), p. 18.

homeland of a confederacy of Yusufzai tribes akin to the tribesmen of the Swat valley; thirdly, there is the tract known as Feudal Tanawal, occupying the centre of the western half of the district and bounded by Haripur tahsil on the south and the Black Mountain on the north.

Feudal Tanawal closely resembles the area adjoining it in this district. Thus it is characterized by a network of steep hills and valleys studded by small villages. Cultivation is carried on at a subsistence level in the occasional open space at the base of a hill or along edges of a stream. Where heights are not too extreme wheat and barley are grown in addition to the main crop of maize.

Darband on the Indus is the only place in this 204 square mile state which approaches what might be called an urban centre. Much more important is the city of Amb directly across the river, which is the seat of the ruler of the area, the Nawab of Amb. Like so many other small territories scattered throughout the Frontier the Nawab of Amb's domain was originally established by the British as a buffer zone, which in this instance was between their corner of territory in Hazara and the trans-Indus tribes to their west.

The Nawab is not only acknowledged as the leader of this independent tribal area, but also as its feudal chief. In the last analysis, however, it is under the 'protection' of the Hazara District Government, which in turn has been delegated responsibility to this effect by the Commissioner of Peshawar Division. For the most part Feudal Tanawal is inhabited by people of the Hindko-speaking Tanaolis clan with a sprinkling of Gujars in the higher hill zones.

Sample Surveys

The following are a number of random sample studies carried out in Hazara District. They touch on village conditions and the activities of a landlord, tenant farmer and migratory worker.

JABBA VILLAGE

Of the 300 or so houses in the village (estimated population of 1,600) 95 per cent. are inhabited by Gujar people, while the rest are a mixture of Swatis, Awans and Syeds. About one quarter of all the land in this village is owned by one Syed family; a further 900 kanals of land (112 acres) are owned by the village headman, while an average village family owns about 40 kanals (5 acres) of cultivable land, but there are 14 tenants working for the main land-owning Syed family.

The entire cultivable land area of this village amounts to roughly 17,000 kanals (2,125 acres). In the winter only about 10 per cent. of the land is sown in wheat, mainly because the soil fertility, as a result of the summer maize crop, is too low to take the strain of double cropping. The poor

fertility of the land commanded by this village can be seen from the fact that most cultivators here have average yields as low as one maund of maize per kanal and only 10 seers (22 pounds) of wheat per kanal.

In order to supplement their extreme low farm income many of the people of this village are employed in some kind of labouring service in nearby towns such as Mansehra or else are engaged in cutting wood in the rapidly diminishing nearby forests. With regard to the latter occupation it is worth mentioning that in the case of this particular village some 250 houses jointly own approximately 5,000 kanals (625 acres) of forest land. Ostensibly their forest work is under some form of government control, but the villagers have been felling trees regularly in order to derive an additional source of income. Apparently as long as they turn over to the Government one-fifth of the amount they earn from such cuttings no control or regeneration is being carried out.

A few miles from this village American Aid funds have been instrumental in the establishment of a highly successful sheep farm. Starting in 1955 with 80 female and 5 male merino sheep imported from the U.S.A. the flock now numbers 331, not including 128 rams which have been sent out on stud to improve flocks all over the NWF. The cross-breeding of these top quality imported sheep with other flocks has been effected so as to improve the quality of both wool and meat.

A MIGRATORY GUJAR

Ibrahim is a Gujar living about two miles north of the village of Balakot which lies on the Kunhar River some 25 miles above Mansehra. He was interviewed on 4th December, 1960 at Jabba village which is about 10 miles south of Balakot while he was walking to Rawalpindi.

During the summer, which is the only time suitable for cultivation, Ibrahim is able to realize roughly 1,500 pounds of grain from the 100 kanals (12 acres) of land he farms. It was not determined whether he was or was not a tenant farmer. Although the Gujar people of this region put a considerable emphasis upon their flocks of sheep and goats as a source of livelihood, particularly during the winter months, Ibrahim, like many of the poorer Gujars, does not possess any animals and is forced to migrate to the Punjab at this time in search of employment. Because he is illiterate and lacking in any sort of skill this usually takes the most menial forms.

According to Ibrahim, if he has been able to save 100 Rupees by the end of the 5 month period he expects to remain in Rawalpindi, he will consider himself a fortunate person. In walking across the hills by the shortest route Ibrahim expected to reach Rawalpindi in about four days' time.

LANDLORD FROM MANSEHRA TAHSIL

Syed Kazim Shah is an absentee landlord living in Mansehra. Altogether he owns about 6,000 kanals (750 acres) of land about 30 miles from Mansehra. Of this amount approximately 4,000 kanals (500 acres) can be classed as forest and hill land unsuitable for cultivation, while the remaining

2,000 kanals (250 acres) are arable. Because none of this land is irrigated it is wholly 'baranni' and, being located in fairly hilly terrain, the fields are, for the most part, terraced.

This landlord has some 30 tenants each working an average of 80 kanals (10 acres) of his land on an 'occupancy rights' or semi-permanent basis. This means they can remain on his land so long as they adhere to the customary practice in this particular area, an equal split in crop yield, with the tenant in this instance providing the seed.

Because Syed Kazim Shah does not relish the task of making his own individual collections a 'munshi' has been employed for this service at a salary of 400 Rupees a year (approximately $80 a year plus food, housing and clothes for the man and his family). Although in this case the munshi was hired as a servant, it is becoming increasingly more popular for landowners under similar conditions to contract out such collection duties to business interests. This makes it possible for landlords to free themselves from both the responsibility of collecting their rents, which are usually paid in kind, and also the marketing of them. This system is unfortunate since these professional collectors, in working on a common basis, are quite often ruthless and unjust in their methods of extracting a proportion of the yield. Being of the 'old school', Syed Kazim Shah takes a very paternal attitude towards his tenants. This takes the form of loaning money interest-free (this is in accordance with Koranic law, which unfortunately is not often followed) and in cases where his tenants are faced with extra expenses involved with marriages, funerals etc., outright grants of cash.

Since his lands are high enough to suffer frequent periods of freezing weather and snow, no winter wheat is possible. His tenants therefore concentrate on a summer maize crop, which according to him yields something like 3–4 maunds a kanal. With maize currently bringing in about 14 Rupees 8 annas per maund this means that Syed Kazim Shah is realizing a gross profit of at least 50,000 Rupees a year. Even with the high yields which he claims his tenants are getting, Syed Kazim Shah was quick to point out that they are still dependent for about 20 per cent. of their food requirements on outside sources. This deficit as well as the costs involved in their other outside needs, particularly for manufactured items, is met through the relatively large number of animals that are kept. Each family averages about 15 buffaloes and 150 sheep and goats. These are given free grazing privileges on the owner's 4,000 kanals of uncultivated land.

All of the tenants of Syed Kazim Shah are of Gujar origin. From practical experience he has found that apart from this group, and also the Swatis and Sayyids, no other people in the district are capable of withstanding the bitterly cold winter temperatures of this region. On the other hand, he claimed, neither are these northern people capable of standing up to the hot summer temperatures experienced in areas farther to the south.

A TENANT FARMER

Mir Afzal is a tenant farmer of the Hindko-speaking Tanawali clan.

He cultivates approximately 70 kanals (9 acres) of baranni land near the village of Rolu, about four miles south of Mansehra on the Abbottabad road. Because he has a fairly sizeable plot to work with, this tenant does not use the same land for wheat as he does for maize (wheat and maize being his two principal crops). About 40 of the 70 kanals are given over to a summer maize crop while the rest is devoted to winter wheat. The land he uses for winter-sown wheat is allowed to stand fallow during the summer, but on the maize land in winter he sows a fodder crop in order to provide year-round feed for two bullocks and two buffaloes which he owns himself.

It should be noted here that Mir Afzal's preference for buffaloes as a source of milk and bullocks for general draught work is common along the entire Frontier. This is based on the assumption made by most peasant farmers that, in proportion to the amount of work performed against the fodder required, the bullock far exceeds the male buffalo in work output. In addition he is considered to be much faster. Correspondingly, the buffalo cow delivers far more milk with a higher butter fat content and needs less fodder than an ordinary cow.

Mir Afzal estimates that he gets 600 maunds (5,000 pounds) from his 40 kanals of maize and 40 maunds (3,200 pounds) from the 30 kanals of wheat, half of which he turns over to the owner of the land. In addition to the two bullocks and two milk buffaloes he has one sheep, the wool of which his family uses in order to make their own clothes and blankets. This tenant farmer has two infant sons; he also does not have a penny in savings. The only time that money ever passes through his hands is when an unusually good harvest enables him to sell a small part of his wheat and maize crop; that is, after he has delivered half the yield to the owner. He cannot afford to have tea or meat, so he goes without them. But Mir Afzal considers himself a fortunate man; having farmed this piece of land for five years, he owes no debts to anyone, the owner of the land is decent to him, and after all, he said, 'things could be much more difficult!'

III

THE PESHAWAR BASIN AREA

THE Peshawar Basin is the first and most important of the four step-like basins which proceed down the length of the NWF. Formed by the Kabul River and its main tributaries, the basin sits roughly in the centre of the NWF. It is by far the most significant settlement area in the entire region, embracing the Peshawar and Mardan Administrative Districts, with an estimated population in 1958 of nearly 2,000,000. In addition, it contains Peshawar City, by far the largest and most influential urban centre on the Frontier along with its important military cantonment.

The Basin's covering of rich alluvial soils combined with its canal network and an extensive system of perennial irrigation has made it the most important agricultural region of the NWF and one of the most productive in all of Pakistan. The region possesses a system of transportation in keeping with its social and economic importance. Peshawar City enjoys excellent rail, air and road connections with Rawalpindi, the national capital; a system of good metalled roads provides fairly rapid and safe transport between the different settlements within the Basin, as well as easy access to the Afghan border.

The Basin has always been a region of great social, political, and religious importance. As the point of entry for most external cultural influence in the NWF, it continues to play an important role in diffusing more modern innovations into the traditional society of the NWF.

Although closely identified socially and economically with the Peshawar Basin, the jumbled mass of barren ranges identified as the Khattak hills does form an effective natural barrier to the lower-lying Kohat Basin to the south.

PESHAWAR BASIN

This saucer-shaped basin is probably the most distinct physiographic region within the entire Frontier. It is surrounded on all sides by barren hills, except on the east where the boundary is open to the Indus River. Here it offers easy access to the vast plains of the Punjab through the worn Potwar uplands. Comprising the whole of Peshawar and Mardan districts plus small parts of the neighbouring

tribal territories, the vale of Peshawar, as it is often referred to, covers approximately 2,600 square miles in area, extending 72 miles along its east-west axis and 52 miles north and south.

Structurally it has not been determined whether or not the basin was produced by faulting or by down-warping. Coulson suggests, however, that the tremendous weight of the detritus and sediment poured on to it in the Pleistocene period may have been heavy enough to depress its valley floor.

Following through the centre of the Peshawar Basin in a south-easterly direction is the Kabul River. Before this mighty torrent emerges from its deep gorge in the Mohmand hills on to the basin floor at Warsak, it is already carrying the combined drainage of the entire southern face of the Hindu Kush. In crossing the vale of Peshawar it picks up practically the whole drainage of the tract before mixing with the swirling waters of the Indus just above Attock.

On entering the plain the Kabul is slowed down to such a degree that it immediately begins dividing up into a number of intricately braided channels. These, however, soon take shape as two main branches—the Adezai to the north and the Nagoman to the south. Near the village of Nisatta, not only do these main channels link up again, but a few miles upstream at Charsadda there is a junction of the Kabul with the important Swat River. Below this point till it empties into the Indus the joint Kabul-Swat River flows in a single channel known as the Landai. Downstream from Nowshera, the Landai has cut out for itself a deep channel enclosed by steep banks.

Other important tributaries of the Kabul as it flows through the Peshawar Basin are the Bara River, which drains most of the south-western part of the Basin, and the Kalpani stream and its tributaries from the north. The Bara rises in the secluded Afridi valleys of Rajgul and Maidan just south of the main Sufed Koh range, and flows north-eastwards, passing within a few miles of Peshawar before emptying into the Kabul River near Nisatta. Were it not for the fact that it supplies most of Peshawar with its drinking water, the Bara would be relatively unimportant. This is largely because the river is too deeply incised for it to be of any real use for irrigation. The Kalpani and its main tributary the Maqam carry the drainage of the middle northern area of the basin. But like the Bara, the Kalpani is totally useless for any large-scale irrigation schemes, being confined throughout most of its course within high banks. Other hill torrents of varying degrees of importance fall into the basin at any number of places from the surrounding Afridi, Khattak, Mohmand, and Buner ranges.

Physiographically, the Peshawar Basin can be conveniently divided

into a few well-defined sub-regions. Since most of the bedrock in the basin has been buried under a deep alluvial mantle these sub-divisions are based primarily on the mode of alluvial deposition. These may be described as:

1. *Central Lowland,* remarkably flat and occupying the greater part of the entire vale; principally overlaid with a medium to fine unstratified sandy loam.

   This central plain can be further broken down into:

   (*a*) *The Doaba*, this is a low-lying alluvial plain interlaced by numerous channels; it represents the active flood plain located between the Kabul and Swat Rivers.
   (*b*) *Hashtnagar* is that part of the central lowland east of the Abazai River (northern branch of the Swat River) stretching to the borders of Mardan and Nowshera Tahsils as a wide upland plain.
   (*c*) *Yusufzai plain*, essentially the drainage basin of the Kalpani system, it comprises the largest part of the central plain and consists of an extraordinarily level plain sloping gradually to the Kabul River.

2. *Piedmont Zone*, this circumscribes the central lowlands in varying widths; it is a transitional zone of high-lying lands quite frequently composed of a series of alluvial fans which have coalesced; soils in this sub-region exhibit an orderly textual sequence from coarse or moderately coarse near the mountain base which lies directly in back of this zone to moderately fine or fine materials along the lower piedmont slopes fronting on the plain; on the whole this area offers a rough barren terrain cut by deeply incised rivers and intricate ravines.
3. *Sar-i-Maira*, this prominent sandstone ridge represents the true eastward limit of the Peshawar valley; all of the country east of this ridge (included in Mardan district) belongs properly to the valley of the Indus; essentially it is a rolling sand plain abruptly overlooking the Kabul River on the south and merging gradually with the Ysufzai plain to the north and west.
4. *Indus Plain*, a flat to undulating plain between the sar-i-Mara and the Indus River; soil materials here consist almost entirely of fine flood plain deposits from the Indus.

Synopsis of Village Survey carried out in the Peshawar Basin. Although the Peshawar Basin and its outlying hills are usually thought to be a monotonous region, a careful examination of the

following village sample studies should prove otherwise. The 5 settlements which were investigated are located near the central part of the basin, within a radius of about 15 miles. No specific sampling techniques were employed in determining which villages were to be chosen.

Before selecting the villages, a complete reconnaissance of the basin was carried out. It soon became apparent that irrigation, or the lack thereof, would have to be the main basis of consideration. The region thus could be broken down into the irrigated basin areas, the largely non-irrigated basin areas and the non-irrigated hill fringe areas. The other criteria used as a basis for selection concerned crop specialization. The last named was thought necessary because of the great significance given here to the cultivation of the following cash crops: sugar cane, tobacco and fruit.

Once these basic criteria were formulated further consideration was given to such factors as the ethnic composition of the people of the village, its size, the predominant types of land tenure and the location. Although a jeep was used for transport during the survey, the last factor turned out to be of the utmost importance, particularly in view of the limited amount of time available in which to conduct this survey.

The following villages were selected:

1. *Salim Khan*—entirely irrigated by canals with almost all of its land devoted to sugar cane. Most of the villages in this part of the basin also specialize in sugar cane and frequently all their land is owned by only a few wealthy landlords; this means that land fragmentation is kept down to a minimum, another factor ensuring the successful growing of this rather bulky water-hungry cash crop.

2. *Marguz Aka Khel*—partially irrigated by 'Persian water wheels' —this is tobacco land 'par excellence', it is also the village exhibiting the worst forms of land fragmentation; this is a problem that is characteristic of practically all the tobacco growing area.

3. *Bara Banda*—partially irrigated by canal and partially by Persian wheel; irrigation facilities are deficient and there is therefore a concentration of the staple food grains wheat and maize, with the former occupying a much larger area because of the greater reliability of winter rainfall. A certain amount of vegetables and fodder is also grown for local use and commercial sale. Villages of this type are not usually self-sufficient and therefore depend a great deal on outside sources of income.

4. *Tangi*—located in the Khattak hills, which means that like all villages in the hill fringes it is entirely dependent on rainfall for crop cultivation; this practically excludes a kharif crop and it thus becomes

clear why villages of this type have become permanent base camps for migrant labour.

5. *Balu*—here the most intensified type of farming carried on in the basin is to be found; almost all the food produced is sold outside the village which is non-Pathan; this usually includes fruit, vegetables (for the larger urban areas in the basin) and dairy products; villages of this type are usually located close to large urban centres.

Accompanying this study are a series of maps based on those used by the District Revenue Department in evaluating land taxes. Although all are 30 years old, they are considered extremely useful, not only because of their accuracy even today but, what is more important, for the light they throw on the complex uses made of the land in this seemingly homogeneous area. They also demonstrate clearly the serious problems connected with land fragmentation.

Sample Study of Salim Khan Village

A village of 100 houses (about 500 persons), Salim Khan lies beside distributary No. 8 of the Upper Swat Canal, about 12 miles from Mardan city and just off the main Mardan-Charsadda road. Out of the 100 families making up the village only 25 or so are actually engaged in farming the 250 acres of irrigated land that comprise the total area under cultivation; they are tenants, for all the village lands are owned by one Ghulam Sarwar Khan. The other families residing in the village work generally as labourers in the sugar factories located at Mardan and Takht-Bhai. All the people living in this village are Pathans of the Mohmand (Kuz) tribe.

Land fragmentation is no problem in this particular village; individual holdings average about 100 acres for each family and in no instance do they drop below five. Approximately 75 per cent. of the total cropped area is devoted to sugar cane, while the remainder is given to such crops as maize, wheat and barley. If it were not for the fact that these grain crops are needed for local consumption and animal forage, it is likely that all of the land would be given over to sugar cane, the normal yield of which in Salim Khan averages 250–300 maunds per acre. Enough money is earned from this crop to enable the villagers to buy all their additional needs from outside.

Though an official government ordinance stipulates that sugar cane plants are not to be left in the ground for more than three years, in Salim Khan a plant often remains in the ground continuously for eight years. The cane is planted any time between the 15th of November and the 15th of March and takes a full year to reach maturity. Fields are irrigated every second or third week, access rights being based usually on the size of the field, status in the village, and on a certain sequence. In practice this works out to about one hour per acre per week. If someone does not receive his water one week he normally gets a longer period allotted to him the following week. Ammonium sulphate is now being applied to the ground, but

only after every third year because of its high cost. Yearly, however, large amounts of manure are used at the start of the growing season. Since growing sugar cane requires a great deal more work and attention than other crops, the tenants here share the value of their harvests on a 50–50 basis with the owner. This is in contrast to the two-thirds or three-quarters agreement usually accorded to tenants of irrigated land. In addition, the Khan here not only pays the revenue, but also provides the seed free and meets the irrigation charges, which amount to about 20 rupees ($4) per acre for sugar cane and 10 rupees ($2) per acre per year for other crops. If during the cutting season there is a shortage of labour, Gujars from Swat are usually called in to make up the temporary deficit.

This village did not specialize in growing sugar cane until the sugar crushing mills opened at Mardan. Before that time the area was mainly given over to the cultivation of wheat, maize, cotton and rice. An interesting crop now being tried out in the area is called 'arhar'. This is a fast-growing tall weed which can be used as fuel in the making of gur.

A great source of discontent in Salim Khan is the relationship between the village and the crushing mills. The villagers maintain that they are being exploited by the mills: not only are the mills refusing to accept their entire crop after harvesting, but, what is more, the villagers claim that this is being used as an economic lever to force them into accepting lower prices. Haulage to the mill, it might be pointed out here, costs the villager about 40 Rupees per truckload.

In some nearby villages where the bulk of the land is owned by powerful Nawabs (in one case five brothers own an estimated 1,000 acres) mechanized farming is being carried on. Because of the increased efficiency with which tractors can be used on these large plots of land, yields here frequently go as high as 400 maunds per acre. In addition, a considerable saving in land is obtained through the abolition of fodder crops.

Sample Village Study of Marguz Aka Khel

This village, situated 11 miles south-west of the small town of Topi in Swabi Tahsil, is known all over the Peshawar Basin for its cultivation of top-grade Virginia and Country tobacco. So valuable is some of this land, particularly those portions irrigated by 'Persian wheels', that one acre often sells for as much as 50,000 rupees (whereas similar type land near Akora Khattak in Nowshera Tahsil sells for 4,000 rupees).

As a consequence of these extremely high land values, village settlement in this area has developed along rather unique lines. Instead of following the small diffused village pattern characteristic of most of the rest of the vale, settlements here are unusually large, with practically no small villages scattered between them. The reason for this is that the land is so valuable and distributed in such small fragments among so many different persons, that it is uneconomical for them to live on their own land. In the case of Marguz Aka Khel this means that the people must often walk long distances to their fields, which because of extreme fragmentation are not

only located in widely separated areas, but frequently are so small that the ground can be cultivated only by hand. Although some pieces of land are hardly large enough for a man to walk round on, the villagers are proud of the fact that tenancy is almost unheard of here. They were quick to point out the absence of any Khans or large landlords in their village, that the largest single holding contains no more than 4 acres of 'Persian wheel' land and 25 acres of baranni land. No government programme of land consolidation has been put into effect here.

On the 1,200 acres commanded by this village there are 102 Persian wheels in operation. Since each is able to irrigate approximately four acres, this means that only one third of the total acreage is under irrigation. Although a certain amount of rotation is carried out in order to give the land a rest, the irrigated land is reserved solely for the growing of tobacco. Wheat and barley as rabi and maize as kharif are the usual crops on the baranni land, though the villagers predict that as soon as the Pehur Canal[1] is made more operable, there will be a significant shift towards the other highly profitable cash crop, sugar cane.

The farmers of this village average about 96 maunds per acre of Virginia tobacco (which occupies about one third of their tobacco acreage) and 56 maunds per acre of Country tobacco. The latter earns them approximately 1,000 rupees per acre and the Virginia variety about half that amount. Each year around the 25th November the first seedlings of both varieties are planted in carefully prepared boxes. The heartier Virginia variety is transplanted in February and the Country in March. The first picking of the Virginia commences in April or May and the Country in the latter part of June. It is noteworthy that the Country blend is particularly in demand on the Frontier as a snuff tobacco. This in part accounts for the much higher price it brings on the open market.

Something like five families make use of one Persian water wheel, all of whom pay for its upkeep according to the amount of land they are cultivating and the amount of the water they are using from it. On the whole one family cultivates about one acre of 'Persian wheel' land and six acres of baranni. This works out about one and a half canals including both 'Persian wheel' and baranni.

Although the absence of tenancy is something normally to be applauded, the situation is somewhat reversed when:

(*a*) tobacco is the crop under cultivation and,

(*b*) land fragmentation is as extreme as it is around Marguz Aka Khel. Unlike other crops, tobacco needs to be cultivated on a much more systematic and exacting basis. This is illustrated by the fact that the two large tobacco companies operating in the basin will only sign contracts with those farmers who own their own tobacco curing barns. As this is generally beyond the means of the smaller farmers, unscrupulous sub-contractors have lately begun appearing on the scene. Since no co-operatives are yet in

[1] A flood water canal operating from a cut in the bank of the Indus above the village of Topi.

operation, these sub-contractors are in a position to buy up the crops from the small hard-pressed farmers at prices often well below the current market level.

Many of the difficulties associated with land fragmentation stem from the inheritance laws. According to Islamic law (modified in 1950), one eighth of a man's land passes on his death to his widow, another one sixth to his mother, and the remainder is divided among the sons and daughters. In the case of the daughters, however, they receive only half the amount of a male heir; two daughters will thus receive the amount of one son.

All of the people in this village are Yusufzai Mandanr. Considering the tremendous pressure on the land, it is understandable that no family is entirely dependent on agriculture for its livelihood. Marguz Aka Khel is capable of meeting only half its total food requirements; the other half must be purchased from outside sources.

Sample Village Study of Bara Banda

This village of Muhammadzai Pathans has 600 houses[2] and is located about 4 miles north of Nowshera, just off the main Nowshera-Mardan road. In the entire village there are 2,300 square chains[3] available for cultivation. This means that each family holds approximately one acre of land.

Lying at the tail end of the Lower Swat Canal, Bara Banda has for some years experienced a recurring shortage of water. Although in theory it is supposed to receive a full share of the canal's water, inefficiency and corruption on the part of local irrigation department officials and the greed and dishonesty of farmers further up the canal have reduced the canal's flow here almost to a trickle. The seriousness of this situation is reflected in the fact that the village is forced to buy 60 per cent. of its food and other needs from outside sources. A great many of the villagers, as a result, have had to seek service elsewhere, mainly as labourers or else in the army.

Bara Banda is one of the first villages where the Central Government has taken an active part in land consolidation. By putting considerable pressure on the villagers the government eventually obtained their consent to the temporary appropriation of all of their land. This was supposed to be followed by a re-allocation of their plots in such a manner as to enable individual families to farm contiguous rather than widely dispersed tracts. At this juncture, however, complications developed because of the widely varying fertility of the individual pieces. To resolve this, and to avoid imputations of injustice and prejudice, the government was forced to appoint an advisory board consisting of nine village members. Together they evaluated the land and then re-allocated it on a basis proportionate to its productivity. As a result, in this village land is now grouped on a family plot basis.

It is difficult to see at present what lasting effects this regroupment will have, for the village still follows the usual practices associated with Muslim inheritance laws, including the 1950 modifications which permit daughters

[2] One household is thought to average five persons.

[3] One chain equals 50 feet.

to inherit half of the amount due to male heirs. It would seem under these conditions that in a few generations land fragmentation will again be a problem, the only difference being that the plots will be smaller. One solution the Central Government is considering in an effort to cope with this situation involves a minimum limit on the size of a piece of land to which the inheritance laws can be applied, i.e. 12 acres. Thus, a relatively small piece of land would have to be passed down in its entirety and not further sub-divided among the existing heirs.

If they had enough irrigation water at their disposal, the villagers of Bara Banda indicated they would certainly have more land under sugar cane than at present (20 per cent. of the total crop area). As it is, the village lands are mainly given over to food grains with the winter rabi crop (wheat mainly) occupying by far the largest area.

Wheat is planted here about the 15th of October. Most of the seed is the villagers' own and is sown by the broadcast method. Chemical fertilizers (generally ammonium sulphate), available on a subsidy from the government, are now becoming widely used. They are usually applied in January and February when the wheat has begun to break the ground. Little further work is done with the crop till it is harvested, usually from mid-April to mid-May. Using locally raised seeds, yields here are anywhere between 10 to 16 maunds per acre; by using seeds provided by government agricultural officials (which cost substantially more) yields up to 24 maunds per acre have been obtained. One man in the village, Mohammed Isa, has shown what a little personal initiative can achieve. By taking special pains in selecting only the best seeds for cultivation, he has obtained as much as 34 maunds per acre.

During harvest time about five to eight families (according to accessibility to each other's fields or personal friendship) will co-operate and pool their efforts, sharing the use of their bullocks, which are needed for the threshing of the wheat. Threshing is effected by the bullocks trampling over the wheat in a circular enclosure. Such co-operation becomes imperative when only about 40 of the houses own draught animals.

After the wheat is planted, the farmers of Bara Banda will wait about a month for rain. If none is forthcoming they will then try to get irrigation water brought on to their fields. If obtainable, the water is applied about four times in the growing season, the last and most important application being in the last week of March or first week of April.

Maize planting begins about the 1st to the 15th of August. Not all the wheat land is used for maize; only the best and most heavily manured land is used for two successive crops, and wheat remains the primary crop, with maize being raised only where it is possible. About half the land farmed by this village is double-cropped.

The maize is harvested at any time between the beginning of October and the beginning of November, and the yields average about 24 maunds per acre. Immediately after harvesting the fields are ploughed for wheat. Recent experiments here with American hybrid corn would seem to offer tremendous promise of increased crop yields, provided its large water

requirements can be met—it is far more sensitive to drought and other adverse weather conditions than the Pakistani varieties. Chillies, tobacco and some vegetables are also grown on a small scale, and strangely enough these are the only crops being sold commercially outside the village.

Occupying several temporary houses in the village are a few Powindah families who hire out their camels to the villagers, and some seasonal Gujar immigrants from Swat. All village people are landowners, with the exception of some non-Pathan individuals like the barber, the carpenter, etc. These last are paid in most cases according to the number of bullocks employed on a specific piece of land. With the exception of the carpenter, who receives quite a bit more than the others (since he is responsible for keeping the Persian water wheels repaired), most of these menials received 20 seers of grain per crop per bullock team. In addition the villagers are obliged to give a further one tenth of their crop to the mullah who sees to it that the mosque is maintained. The barber, who performs the additional function of preparing weddings, funerals, etc., receives 20 seers of each crop grown per house per year.

Sample Village Study of Tangi

Tangi village is located in the Khattak hills about 10 miles south of Nowshera and a few miles to the west of the unpaved road to Ziarat Kaka Sahib. This fortified village of 180 houses, all of which are constructed of stone and slate from the surrounding hills, is settled wholly by Khattak Pathans of the Akora clan. In contrast to the other sample villages, Tangi is located in terrain hilly enough to support a certain amount of terraced agriculture.

With the exception of one or two wells, which are barely able to meet the people's drinking-water requirements, the village is entirely dependent on rainfall for the cultivation of crops—that is on precipitation following the none too reliable winter cyclonic storms. In consequence, the wheat yields of this village hardly exceed 10 maunds per acre in most years.

Generally, the village people do not wait for the first winter rain, but begin planting between mid-October and mid-November. So acutely important is rainfall to people of this village that, if it should happen to rain during the sowing season and certain pieces of land are not yet seeded and ploughed, they will sow the seeds first in order to take advantage of the moisture and then plough them in later on. But even if the village does get rain, there are often many who cannot take advantage of it, since a shortage of draught animals makes it necessary for some to wait a long time before they can have the use of the animals. Owners with their own bullocks plough their fields on an average twice a year.

Harvesting takes place from mid-April to mid-May, after which time the land is left fallow. If a family possesses a set of bullocks they will begin ploughing immediately after the harvest in order to break up the soil and make it better able to absorb whatever moisture falls during the summer.

In these circumstances Tangi is able to produce only a third of its total

food requirements. This naturally makes the people largely dependent on outside sources of income. In fact Khattak people provide a considerable portion of the labour force of the large-scale construction projects currently being undertaken in West Pakistan. So renowned are these people for their skills that labour contractors make yearly trips into the Khattak hills in order to recruit them for these large undertakings.

It is usually during the long periods between the planting and harvesting of the baranni crop that the men are away at the construction sites (the women remain in the village all the time). The pattern is something like this: after harvesting the baranni crop the men spend a few weeks ploughing the land again; they return to the construction camps; and at the end of October they are back in Tangi again ploughing and sowing. Of the men interviewed in this village who worked on construction projects the average monthly wage as labourers was 80 rupees.

Even though many of the men spend only a few weeks in the village in the course of a year, they still consider Tangi their home. In some families with several brothers away, the men will take turns in coming home in order that the others may stay away longer periods and earn more money. Service in the army and police are also popular vocations for men of the Khattak tribe, especially as they are noted for being one of the most dependable and loyal tribes along the entire Frontier. Under such conditions, Tangi may be regarded as a 'permanent base camp for migrant labour'. This is upheld by the fact that there has been no significant emigration from this village over the past 100 years.

As far as inheritance is concerned the land is distributed equally to all sons; only in the case of a few families will the daughters receive any share of the land. As the land is unproductive, the problems associated with fragmentation have even greater significance here.

All the people in this village own some amount of land, including menials[4] like the carpenter and shoemaker, etc. The average-size plot of land owned by a family is one and a half acres. The richest man of the village owns no more than 10–12 acres of productive land, though he owns a hundred or more acres of waste land. So poor is the waste land surrounding the village even for pasturage that it is impossible for large numbers of sheep and even goats to be kept in the village. Thus, an average household keeps no more than one or two of these animals.

The village is noteworthy for its relative seclusion in the hills and for the almost total lack of 'purdah' on the part of the women. In commenting on this the villagers pointed out that practically everyone in the village was directly related, so it was not of much importance that the women should be covered.

Sample Village Study of Balu

Balu is located in the extreme western part of Nowshera Tahsil about a quarter of a mile off the 'Grand Trunk' road. It is a village of some 400

[4] These professions are considered menial from a Pathan standpoint.

houses; 60 per cent. of its inhabitants are the Hindko-speaking Malaear and the rest are Awan people. These non-Pathan peoples immigrated into the Peshawar Basin a hundred years ago at a time when the area was completely undeveloped. Up to 1920 the people of Balu were dependent on 'Persian water wheels' which they had dug themselves in order to produce subsistence crops of jowar and vegetables. Although cuts were made in the Kabul River for purposes of local irrigation, it was not until the Kabul River canal was constructed 60–70 years ago that the area really became productive. By 1920 there had been a definite shift from subsistence farming to the modern commercial crops of wheat and maize, etc.

It was a significant event in the lives of the progressive people of this village when the nearby government-operated Tarnab farm came into existence. Under government assistance they began putting their lands under orchards. Today 60 per cent. to 70 per cent. of the total land under cultivation is in orchards. Of the rest, approximately 10 per cent. is given over to vegetables (generally for local consumption), about 10 per cent. is in sugar cane (half for sale in Punjab for chewing purposes and half for sale to the mill at Mardan), and the rest is in wheat, maize and fodder, all for local use. These locally grown food crops are not nearly large enough in quantity to make the village self-sufficient in food. This means that about two-thirds of its food and fodder requirements have to be met from outside sources. But as the farmers in Balu average 1,500 to 2,000 rupees per acre for their orchard crops they are in a good position to meet their food deficit.

Peaches and pears are the most important orchard crops and account for 70 per cent. of the total number of trees. Oranges, arros and plums are fruits of lesser importance. One of the main difficulties in developing orchards is, of course, the long period of time required for the trees to mature. Without government help very few farmers in the province could afford to maintain themselves until the trees begin producing a money-making crop. In the case of peaches this requires 6 to 7 years; plums 3, oranges 3 to 4, and pears 5 to 6 years.

Irrigation water is normally used on the orchards only twice each month during the summer and at the most once a month during the winter months. All of the land in Balu village is irrigated. Until the time when the trees are fully matured, crops like Shaftal (fodder), wheat and grass crops are grown between the rows of trees. After the trees reach maturity their shade prohibits further growth of these secondary crops; they themselves do not hurt the growth of the fruit trees. Land between the trees is ploughed on an average of 4 times a year; since bullocks are scarce arrangements are usually made between parties so that the whole village eventually is able to use them.

The usual yield of fruit is about 160 pounds of fruit per tree. As to longevity, a plum tree here will bear fruit for 16 to 17 years, pears 40 to 50 years, peaches 12 to 14 years and oranges 20 years. About 12 to 13 maunds of wheat per acre are being harvested.

The fruit is harvested between May and August. Most of it goes to the

Punjab by train or hired truck, usually through the services of a contractor. If the goods are to be disposed of in Peshawar the village will then use one of its own men to sell it direct to the retailer.

There is a total of 250 acres under cultivation in this village. The average amount being cultivated by any one family is from one half to three acres. One man, Sulaiman Khel, an absentee landlord living in the Punjab, owns the greatest acreage, i.e. 40 acres. Of this quantity his son is farming half, while the other half has been let out to tenants.

In addition to the usual forms of tenancy, there is one kind practised in Balu, as a result of its specialization in orchards, that is not carried on elsewhere. In this instance a tenant is called an *ijaradar* and he pays a flat cash amount (depending on the fertility of the land it varies from 200 to 250 rupees per acre) for the land he rents. He also pays all of the taxes and irrigation fees. Of the total number of villagers farming in this village about 60 per cent. are individual owners; 10 per cent. are *ijaradar* and 30 per cent. are *Zamindar* (working on the usual 50–50 basis with the owner paying the land revenue taxes half the cost of the irrigation, while the tenant provides his own seeds).

KHATTAK HILLS

Rising rapidly from the southern edge of the Peshawar Basin are the generally east-west trending Khattak hills. Though digressing somewhat in overall direction, these hills are nevertheless thought to be a continuation of the mountain backbone which extends down through Hazara. It is noteworthy that their variation from the regularly maintained north-east–south-west alignment seen north of the Peshawar Basin is characteristic of the province's entire central highland zone, which is thought to extend roughly as far south as the Bannu Basin. To discover whether this phenomenon is attributable to 'fold virgation',[5] or is the result of a position adjacent to a secondary area of syntaxis,[6] will require a great deal more field investigation.

Occupying the greater part of this desolate hill tract are its two main ranges, i.e. the Cherat and Nilab Dhasha. They maintain an average height of 3,000 to 5,000 feet, and throw off an array of low-lying hills which in the north extend almost to the banks of the Kabul River. The Cherat range on the north is separated from the Nilab Dhasha by the Khwarra-Nilab valley. In its higher and more narrow western part this valley is drained by the Musa-Darra nullah (or Wach Khwar, as it is called locally) before it empties into the Indus near Nizampur.

[5] Argand, M., *La Tectonique de l'Asie*, Paper before the International Geological Congress at Brussels, 1922.

[6] Davies, L. M., 'Geographical Changes in North-west India during Late Cretaceous and early Tertiary Times' (Proc. *Sixth Pacific Sci. Congress, 1939*, Vol. ii, 1940), pp. 483–501.

The Khwarra-Nilab trough widens out steadily to the east and around Kahi and Nizampur forms an undulating plain with a light and relatively stone-free soil.

PESHAWAR–MARDAN DISTRICTS

General Setting. Although in present conditions life in the Peshawar Basin[7] holds none of the insecurity and hazards which still characterize existence in the independent tribal regions, it is nevertheless an exciting experience to cross the Attock bridge from the Punjab into Peshawar district. Coming into this well-watered vale is a particular pleasure during the pre-monsoon hot season. To the parched traveller emerging from the hot, desolate dusty highlands which surround the two districts, it takes on all the aspects of an oasis in the midst of a great desert. Here among countless shady trees he can find protection from the blazing sun, and by the waters of the numerous canals the opportunity to cleanse his body in preparation for prayer. The swirling Indus at this point is a sharp boundary, dividing peoples not only of different cultures and ethnic origins, but even of different language and dress. It seems that it was here, and not on the crests of the towering ranges to the north and west, that Central Asian influences met those of the sub-continent.

Climate. Because it is almost entirely ringed by highlands the Basin is subject to certain unique climatic conditions, particularly with regard to the distribution of summer rainfall. The fact that the eastern portions of the Basin are more exposed to the monsoonal currents than certain western areas has a pronounced effect on the total amounts of rainfall locally (see Fig. 3). These vary considerably over country within the space of only 20 or 30 miles: thus Peshawar receives an average of 13.7 inches annually, whereas Swabi receives 28.4 inches.[8] In the case of Swabi the summer fall considerably exceeds that received in winter, while the reverse is true for Peshawar.

In general, however, the Basin follows a climatic pattern characteristic of the other plains and low-lying hill areas in the province. This may be analysed on the basis of four periods:

1. Cold weather period (December–March). Winters are relatively cold, but under generally clear skies the afternoons are delightful,

[7] The Peshawar Basin (vale, valley) in this section is understood to include the administrative districts of Peshawar and Mardan.

[8] Government of India, *Final Report of the Third Regular Settlement of the Peshawar District* (Peshawar, Government Stationery and Printing N.W.F.P., 1941), pp. 2–3.

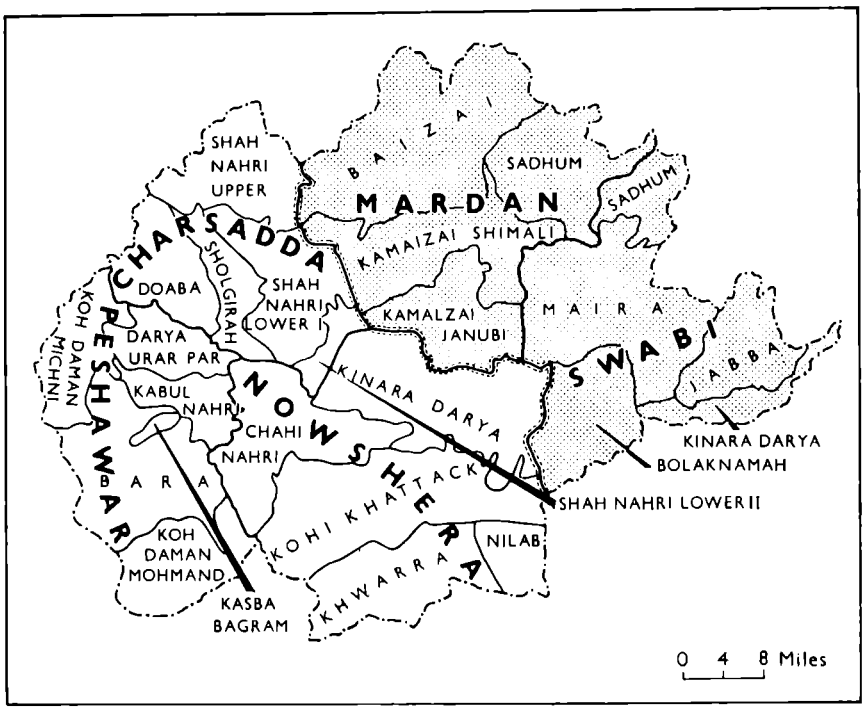

Fig. 13. Peshawar-Mardan Districts: Assessment Circles and Tahsils

the temperature being usually in the lower 60's. Fortunately for the sugar cane crop frosts seldom affect the region for more than a few days during the season. The periodic appearance of cyclonic depressions brings low cloud and drizzling rain, often lasting for a week.

2. Transition period (April–June). As in the plains of N.W. India temperatures increase rapidly after the middle of March, and by the end of April the daily maximum reaches into the 100's and in May and June 115°F. or more; night temperatures continue to rise, reaching 80°F. towards the end of the period. Fortunately the humidity remains low, but severe dust and a perpetual dust-haze add considerably to the general discomfort at this time.
3. Monsoon period (July–September). Although maximum temperatures have dropped somewhat, the occasional convectional showers and frequent spells of cloudiness associated with this season lend themselves to increased humidity. This makes the atmosphere considerably more moist and hence more oppressive until well into September; the diurnal range during this period falls to 20°F. or even less.
4. Transition period (October and November). Normally this is the most settled part of the year: skies are clear, rain is rare and the

surface winds are mild. Temperatures fall rapidly though, and by the end of November the thermometer is dipping into the 30's in the early morning hours.

Agriculture. With the introduction of the new canals associated with the Warsak project, the amount of land under perennial irrigation in the total area of Peshawar and Mardan districts should be approaching or possibly even exceeding one half. This, coupled with the fact that a large proportion of the Basin is covered by a thick layer of fertile alluvial soils, makes the Peshawar Basin, though relatively small in area, one of the most important agricultural regions in Pakistan. In spite of the multitude of crops grown in the Basin, it is possible, using irrigation or lack of irrigation and crop specialization as criteria, to discern a significant agricultural pattern. It becomes possible to divide the basin into the following three categories of land use:

1. Baranni land, associated with unirrigated hill and plains land. This type of land can be found on the outer fringes of the basin proper and, of course, in all the hill tracts. Land in this category is almost exclusively given over to the cultivation of the rabi crop wheat.[9] Kharif is not possible because of the unreliability of the summer showers and the extremely high evapotranspiration rate. Although the soils are quite often fertile, complete dependence on rainfall as the moisture supply results in yields rarely exceeding 10 maunds per acre. Even though the maps included here are often based on data more than thirty years old, it is believed that in most respects they accurately depict conditions today. The one notable exception to this is the increased importance that cash crops have assumed in the Basin over the past fifteen years.
2. Partly irrigated Basin land. Under this category are included areas in which the irrigation facilities are either faulty or simply limited in scope (this includes both canal and well irrigation). Land under this category is very often transitional to the outer baranni areas and thus occupies an inner circular zone roughly bordering the baranni land. Since cash crops are not usually possible on a large scale in this zone, the main emphasis is on the staple food grains wheat and maize, with vegetables and dairy products of secondary interest. The last two are mainly raised for commercial purposes. Only a small amount of the food grains raised here leaves the villages. Where irrigation water is more ample, as in parts of the Doaba or Hashtnagar, the kharif crop

[9] Under these circumstances the villages are dependent on outside sources for more than half their requirements for food.

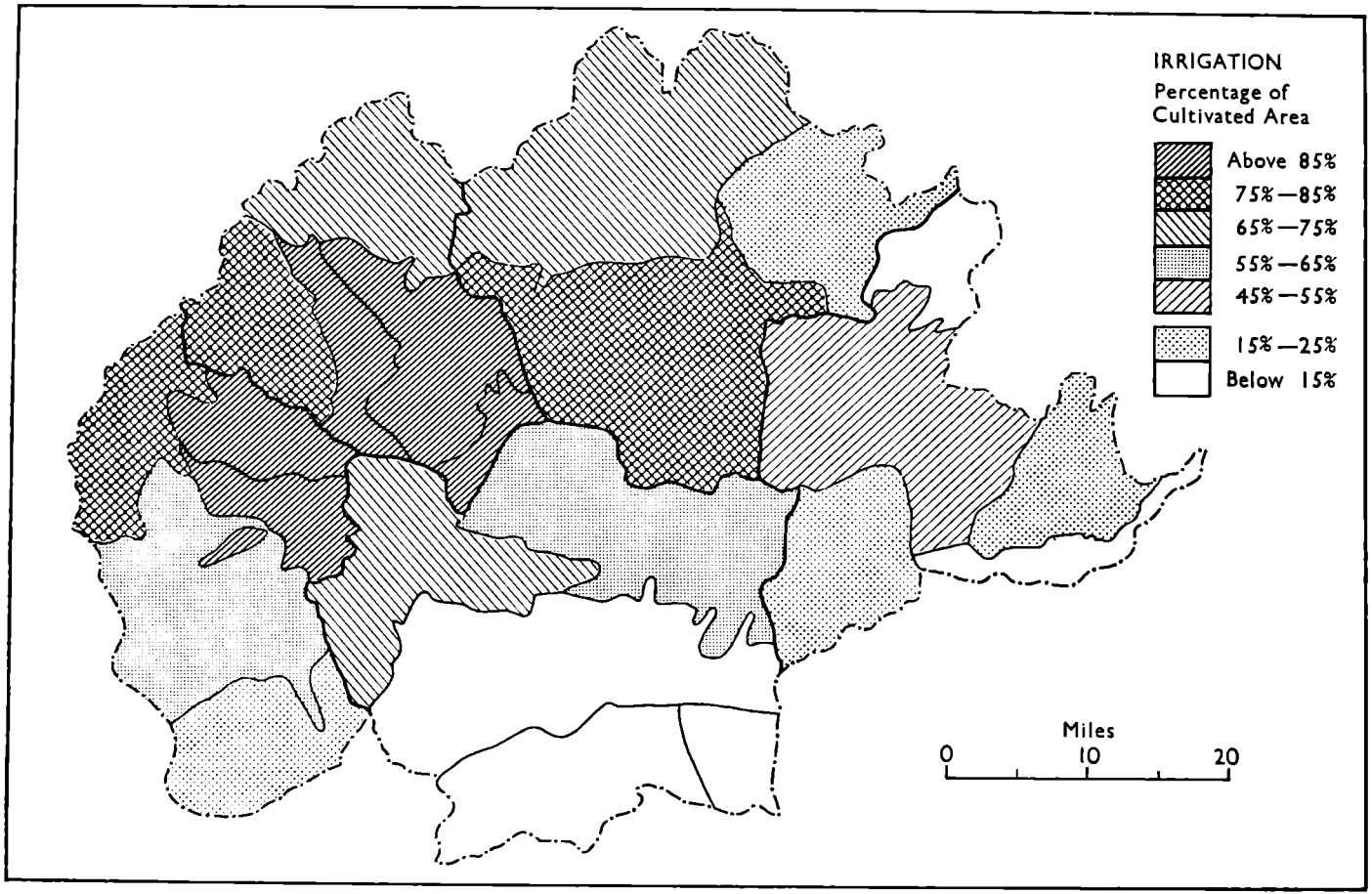

Fig. 14. Peshawar-Mardan Districts: Irrigation percentage of Cultivated Area
(based on Third Regular Settlement Report 1923–30)

maize takes on increased importance, though it never occupies more than 30–35 per cent. of the total cultivated area.

3. Cash crop land. This is usually the best quality land as well as that with access to the best irrigation facilities (*see* Fig. 14) (the Persian-wheel land associated with tobacco cultivation might be considered an exception since the area watered by this means is of relatively small extent). Land under this category is given over to three main crops each of which occupies a fairly well-defined tract in the basin:—

(*a*) Orchards (2 sections): one of the sections specializing in fruit-growing lies in a pie-shaped area girdling Peshawar city for about ten to twelve miles. The limits of this tract are enclosed by the Peshawar-Charsadda and Grand Trunk roads on the one hand and the villages of Chamkani and Akharpura on the other (outer side). A secondary area exists in the vicinity of Tangi and Abazai villages in the extreme north-western part of the Basin.

(*b*) Sugar cane. The area where sugar cane is the specialization is a triangular-shaped zone extending from the small village of Baldin (just above Nahakki, about 9 miles out of Peshawar on the Charsadda road) to an area roughly around Tangi and Abazai and extending eastward—including the area around Takht Bhai to a point a little beyond Mardan. The Lower Swat River canal can be considered as the northern boundary of the zone and the Nisatta-Mardan road its southern limits.

(*c*) Tobacco. This is concentrated almost entirely in the central part of Swabi Tahsil (Mardan District) around the villages of Lahor and Marguz Aka Khel. There has been a notable increase in the past 10 years (associated with the opening of the Pakistan Tobacco Company's re-drying plant at Akora Khattak) in the amount of acreage being devoted to Virginia tobacco. Maize is very often grown here in rotation with the tobacco.

Transport. Largely as a result of earlier military and political considerations the Peshawar Basin today possesses one of the finest transportation networks in all of West Pakistan. Peshawar City is connected with Rawalpindi and the rest of the sub-continent not only by the Grand Trunk road, but also by a broad-gauge railway line which even extends as far as Landi Khana at the western end of the Khyber Pass. A branch line takes off from Nowshera to the north and runs as far as Dargai at the foot of the Malakand range.

Good metalled roads connect Peshawar with Kohat (Bannu, D.I.K. etc.) to the south, with Malakand (Swat, Chitral etc.) via Nowshera to the north and with the Afghan border to the west. Metalled high-

ways also link up all the Tahsil headquarters with Peshawar as well as with one another. Also included in this system are extensions to Tangi from Charsadda, Rustam and Topi (via the Indus boat bridge to Haripur) from Mardan and Shabkadar and Anazai from Peshawar. In addition there are numerous but fairly well maintained unmetalled roads, including those along the banks of the Swat canals and their main distributaries.

Landlordism. Although the percentage of individual landowners is higher in Peshawar and Mardan than in most of the other settled districts, landlords, nevertheless, have considerably more influence in the basin than statistics would seem to indicate. For one thing, though individual holdings are numerous they are often small or extremely fragmented, whereas the areas commanded by landlords, though proportionately smaller in number, run into thousands of acres. Before Martial Law 64 came into effect a man like the Nawab of Hoti could own as much as 50,000 acres of top-quality land in the Basin. Although this new law prohibits persons from holding more than 500 acres of irrigated land, 150 acres of orchards, and 1,000 acres of baranni land, most of the large landholdings still remain intact. By skilfully dividing the shares of land among all of their family members, the landlords have managed to circumvent this law almost entirely.

In the absence of effective governmental controls on sugar cane acreage, many landlords have exploited their position as the owners of large tracts of irrigated land by devoting practically all of their land to this new and profitable cash crop. This has been done even though there is a serious food deficit in the Basin, and in spite of the fact that less than half the cane grown can be utilized by the crushing mills. Out of the 7 crore maunds of sugar cane that are produced in the Peshawar valley, the three mills can hardly crush 3 crores, the balance being either turned into *Gur*[10] or else burnt. Since the price paid for sugar is determined by the weight of the cane brought to the mill and not by the sugar content, this situation has engendered a considerable amount of graft and corruption.

With this new-found interest in cash crop cultivation, landlords seem to show a corresponding lack of interest in and attention to their land. This neglect has increased to a considerable degree as a result of emergence of the contractor collector.[11] Taking their cue from the

[10] Locally made sugar of inferior quality; making Gur is an extremely wasteful way of making sugar, the loss being about 8.5 per cent.; whereas in modern mills the loss is only 2.5 per cent. District Commissioner's Office, Mardan, 28 Oct. 1960.

[11] See sample study on Hazara (Manschra Tahsil) for a more detailed explanation of this term.

mercenary attitude of the landlord, tenants usually make little effort to improve the productivity of the land. Because of their transitory status, they seldom use manure extensively and even crop rotations are careless.

Summary. It would seem that there are four outstanding problems that the inhabitants of Peshawar-Mardan districts must attempt to resolve in order to achieve even a modest rise in living standards. These can be listed in increasing order of importance and difficulty:

(1) The significant but extremely wasteful shift to cash crop cultivation.
(2) Waterlogging of irrigated areas.
(3) The necessity for increased agricultural production.
(4) Over-population.

The seriousness of the wholesale shift to cash crop cultivation is especially noticeable in large sections of Mardan District. Formerly hailed as the granary of the Peshawar valley as far as wheat and maize cultivating was concerned, Mardan District today is a food deficit area as is the rest of the valley. The rich and greedy Zamindars have now put every possible bit of their land into sugar cane and in doing so have totally disregarded the food needs of the people. Quick, decisive and rigidly enforced government quotas on cash crop cultivation could easily check this trend and bring the Basin back once again to a sane agricultural balance.

Waterlogging[12] has not only become a problem in all of Mardan Tahsil and almost one-third of Swabi Tahsil, but is now beginning to affect large areas in Peshawar District as well. Although it has only reached the stage of affecting crop yields, local experts think that, if it continues unchecked, it will result, as over vast areas in the lower Indus Basin, in making land unfit for cultivation.

Although the government is quite active in the field of agriculture extension services, and despite the fact that chemical fertilizers are being made in ever increasing quantities at subsidized rates, crop yields have remained static over the past fifty years. With the help of the International Co-operation Administration the Pakistan Government launched in 1953 a Village—A.I.D. (Agriculture Industrial Development) programme designed to raise living standards and improve crop yields etc., through the philosophy of *Self Help.*[13] Nepotism and a lack of interest by local and national leaders were

[12] *See* section on irrigation.
[13] Khan, M. S., *Five Years of V-AID in Peshawar Region* (Peshawar, Manager Government Printing and Stationery, W. Pakistan, 1960), p. 1.

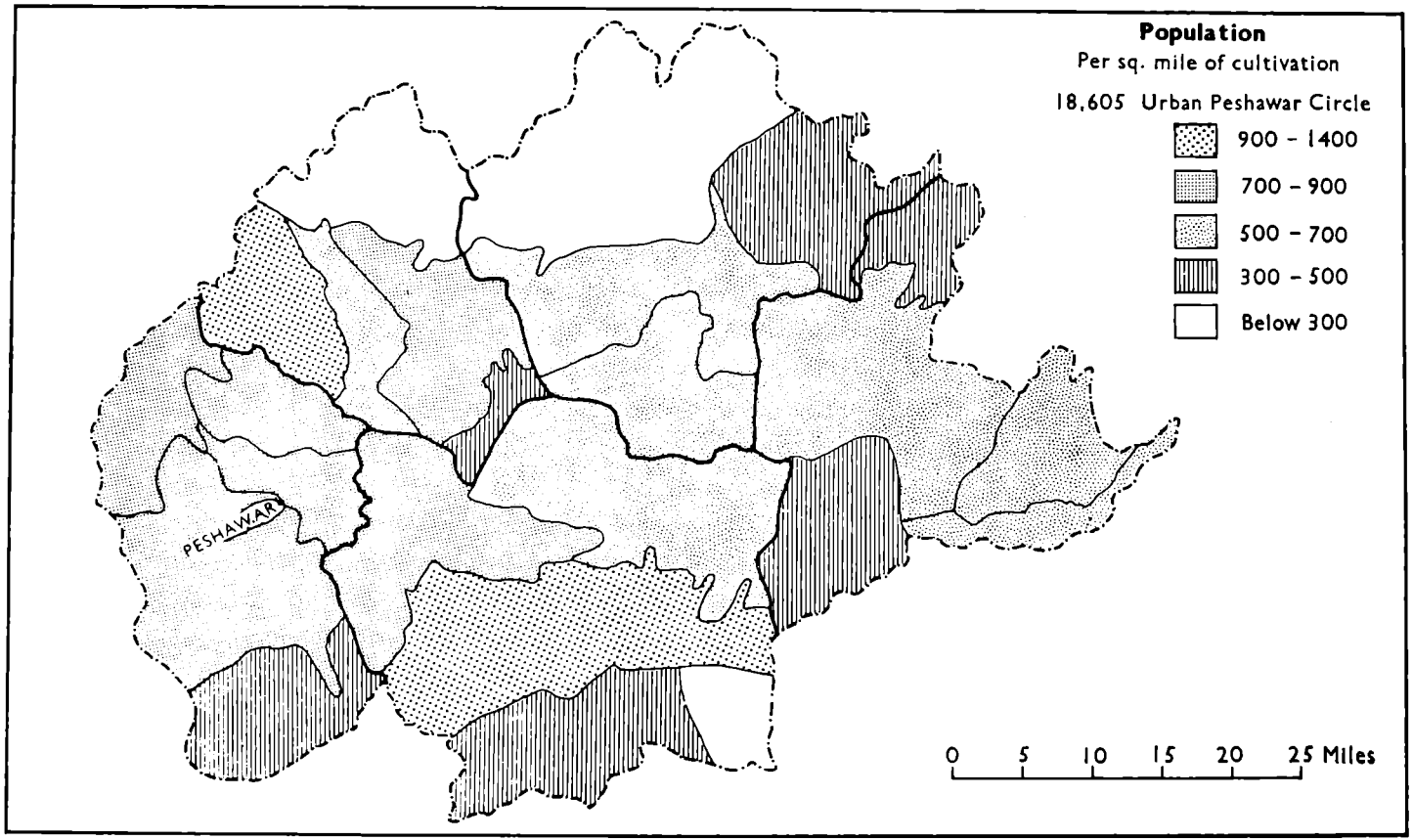

Fig. 15. Peshawar–Mardan Districts: Population per square mile of Cultivation (based as Fig. 14)

instrumental in hastening the abandonment of this ambitious scheme in the early stages of 1961. To replace Village A.I.D., the government is organizing two Agricultural Development Corporations, one for East and another for West Pakistan.

As census figures reveal[14] the rate of population growth since 1921 has become increasingly higher. Taking into account cash crop cultivation, waterlogging, barely noticeable increased crop yields and the limit on the land available for cultivation, this situation becomes much more menacing. The problem is further complicated by the fact that the increase in population has not been accompanied by any appreciable rise in alternative occupations. This, of course, means that because people are not leaving the farms, land fragmentation is assuming even more disastrous proportions.

PESHAWAR CITY

Recent Urban Trends of a Walled Asian City. Peshawar City along with its cantonment is situated in the south-western portion of the Basin about 14 miles east of the entrance to the Khyber Pass. By road it is 276 miles from Lahore, 190 miles from Kabul and 37 miles from Kohat. The city proper occupies a space of 437 acres within its high walls.

Although the city has evolved as a result of its own distinctive historical, physical and social circumstances, it does conform to an urban pattern characteristic of many of the other larger cities located in the north-western part of the sub-continent. First, there is the old city, built centuries ago with its high walls and gates (in the case of Peshawar City there are 16 gates). Jammed into it are the teeming bazaars with their innumerable shops where the merchants sit cross-legged and sell their wares,[15] narrow and irregular streets (usually without pavements), packed with people and traffic of every description and frail elongated buildings made of burnt brick and wattle and kept together by wooden laths. Because population is dense ground rents are exceedingly high, and since a considerable amount of privacy is needed because of the Purdah system, the city's dwellings are usually four or five storeys high and built so close together that the space between the converging upper storeys is frequently narrow enough for a person to jump across the intervening lanes.

[14] Census figures for Peshawar and Mardan Districts (in thousands) estimated by Pakistan Government:

1855	1868	1881	1891	1901	1911	1921	1931	1941	1951	1958
450	525	592	592	780	870	907	974	1,158	1,497	1,917

[15] It is the custom for shops selling similar merchandise, e.g. jewellery, cloth, etc., to be grouped together in separate quarters of the city.

Though its famous bazaars, like the Qissa Khani (Story-Tellers' Bazaar), are no longer visited by Mongol traders from Yarkand or by pilgrims from Samarkand and Tashkent, Peshawar certainly must still be rated one of the most interesting and colourful cities in all Asia. Occupying the confines of its high walls are an estimated 176,000 people living in something like 25,000 separate houses.[16]

Outside the old walled city, Peshawar follows the standard pattern of having a cantonment. Laid out along the most modern lines under British administration, these cantonment areas were designed to serve as the military and to a large extent civil headquarters of the surrounding district. They also contained most of the military barracks, store-houses, repair shops and all the other facilities connected with the military establishment. As a living and shopping area for the European administrators, their families and troops, it is easy to understand that the development of these cantonment areas, including the shopping centres, took place along traditional western lines.[17]

Problems of Development. Two factors which apparently have had a great deal to do with restricting the development and growth of Peshawar City are, first, the necessity of keeping the Purdah system intact, and secondly the lingering fears regarding security. Because of the need to observe the tenets of the Purdah system in this overwhelmingly Muslim city there is very little opportunity to ease crowded conditions by means of co-operative living schemes such as apartment houses. This means that people are either forced to live in the overcrowded city where isolation for the women is ensured by compactness of the buildings, or else they must acquire a costly amount of land in order to be able to construct a high enough wall around it. It should be remembered that, as Purdah is mainly an indication of social distinction, the practice of it is much more prevalent in the cities where there is a considerably greater concentration of wealth.

The second factor inhibiting the development and expansion of Peshawar City has to do with the problem of security. Although conditions outside the walled city are now quite secure, there is still a real fear in the minds of people about deserting the safe confines of the city. This fear manifests itself even in official circles by the fact that many of the gates are still being locked every night.

More concrete evidence regarding the lack of improvement in Peshawar City can be seen from the fact that over the past 27 years a

[16] Estimates by the Chief Officer of Peshawar's Municipal Committee.

[17] Fieldman, H., *The Land and People of Pakistan* (London, Adam and Charles Black, 1958), p. 61.

body known as the 'Improvement Trust' has not been reconstituted. In the past this body, composed as it was of three members of the Municipal Committee and three government officials, met relatively often under government sanction to draw up a series of improvement plans for the city. The calling together of this group, it should be noted, is the first step required if any major improvements in the city are to be initiated. Committees of this sort have been responsible for such projects as the satellite town in Rawalpindi and the Samnabad project in Lahore.

Plans have been drawn up, however, for the construction of a satellite town along the Michni or Kohat road (exact location has not been determined yet) containing about 300 houses. Since the plots associated with this scheme are due to be auctioned in public it is difficult to see how they will evade the clutches of the wealthier business class. A government project of a similar nature already under way, known as the Zaryab Colony, involves the construction of 111 houses for government servants working in the Peshawar area. Similar colonies called Gulbar One and Two are also at various stages of construction outside the city.

Summary. It is difficult to understand why the government persists in its present policy of trying to entice foreign capital to the country with offers of tax reductions and 'tax holidays' rather than using such gimmicks to encourage local business to invest in Pakistan. Instead one finds a system of double taxation, whereby a businessman finds himself paying taxes on the same property to both the Municipal Committee and the Central Government. Actually house building has been on the decline in Pakistan since 1955.[18]

[18] *Pakistan Times*, 16 Feb. 1961.

IV

THE KOHAT BASIN AND ADJOINING HILL ZONE

PROCEEDING southward from the Peshawar Basin, the Kohat Basin is the next important plains area to be encountered. It is a productive agricultural area, whose crops are produced with the aid of the tract's naturally rich soil-covering and a fairly extensive system of irrigation, fed in part by numerous underground springs as well as from the Kohat Toi River.

The strategic importance of the Kohat Basin has been long recognized and this is reflected in an extremely fine system of transportation linking it to the unsettled (tribal) areas and the Afghan border to the west. It is the site for extensive military facilities, including a sizeable cantonment and important air installation, centred on Kohat City, the Basin's major population centre.

KOHAT BASIN

Distinguishable within the Kohat hills are four principal ranges, some of them over fifty miles long with summit elevations of two, three and four thousand feet. Between these east-west trending hills are broader valleys, the surfaces of which are level but sometimes broken by the presence of small hill-remnants of harder material not yet eroded down by the intervening streams. The largest and most northerly of these depressions is that created by the largest stream of the region, the Kohat Toi. This forms the Kohat Basin, the second and smallest in a series of important plains tracts between Peshawar and Dera Ismail Khan. In length the basin can be thought of as stretching from the town of Hangu to the Indus, a distance of some sixty miles; whereas its width varies from a few hundred yards in its upper part to 6 or 7 miles in the vicinity of Kohat City. The portion of it which lies between Kohat City and Hangu is popularly referred to as the Lower Miranzai valley, while farther south it is known as the Baizai and Samilzai plains.

In spite of the fact that the river carries a considerable volume of water, the demands of irrigation are so great in the vicinity of Kohat City that the Kohat Toi soon runs dry below this point, except in times of flood. Although a certain amount of the flow sinks into the stream bed only to well up again lower downstream, the country

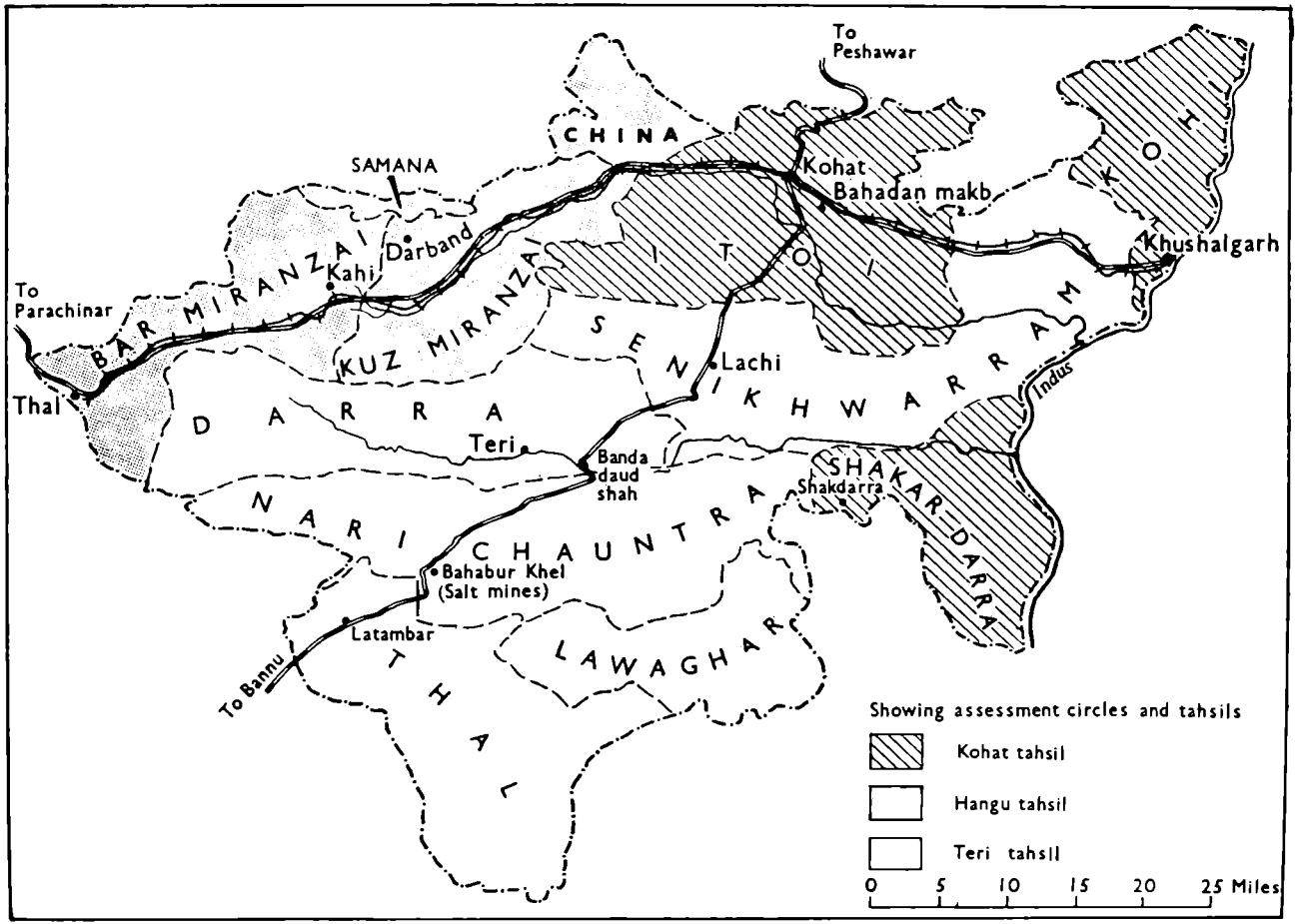

Fig. 16. Kohat District: Assessment Circles and Tahsils

east of Kohat City towards the Indus is nothing but a network of barren hills and deep ravines culminating east of Shakdarra village in a desolate wilderness.[1]

One of the most interesting features of the Kohat Basin is the occurrence of numerous good springs. These are derived from underground water that has had its course interrupted by natural underground dams, generally ridges of limestone. Examples are the very large springs issuing forth near Kohat Cantonment.

KOHAT HILLS

This region is composed of a series of low (averaging 3,000–4,000 ft.) parallel-trending ridges which extend in an east-west direction from the Kurram valley to the Indus. On the north they merge with the Tirah by a vast network of ridges and spurs, while on their southern margins they front the Bannu and Indus Basins.

In the Kohat hills about 18 miles north of Bannu there occur some remarkable and important deposits of rock salt. Although similar formations occur at the base of the Tertiary beds over an area of about 1,000 square miles, it is only in the vicinity of the village Bahadur Khel that extraction becomes commercially feasible. Here the main salt-bearing strata lie exposed on both sides of a small valley for a distance of about 4 miles in an east-west direction. This entire area is considered worth working since most of the rock salt here is remarkably pure in quality (97 per cent. being sodium chloride).[2]

These hills present a most depressing aspect. So wild and sterile is their appearance that it gives one the sense of being on another planet while crossing them. The fact that they are generally composed of extremely soft sandstones and located in an area often subject to the action of salt-charged water has also appreciably influenced their remarkable appearance. In many cases nothing but an eroded stump or even a single slab of rock standing in an upright position remains to testify to the huge Tertiary sedimentary formations that once existed here.

The only stream worthy of the name draining the Kohat hills is the Kohat Toi. It also takes the drainage of the Khanki and that of the Lower Miranzai valley. The drainage of the Upper Miranzai area is carried by the intermittent Shkalai stream which empties into the Kurram at Thal. The central portion of the hills drains into the

[1] Barron, C. A., *Settlement Report of the Kohat District—1900–1905* (Lahore, The Civil and Military Gazette Press, 1907), p 2.

[2] Wynne, A. B., 'The Trans-Indus Salt Region in the Kohat District' (*Memoirs of the Geological Survey of India*, Vol. XI, 1875), p. 24.

Indus chiefly through the Teri Toi, whose water, once it enters the salt region, is so brackish as to be useless for agriculture. The drainage of the south-western part of the hills is towards the Kurram.

KOHAT DISTRICT

General Setting. As its Pushtu name indicates this district is essentially rough and hilly in character. The series of 3,000–4,000 feet east-west trending limestone-sandstone hills of Tertiary age which comprise the great portion of Kohat District forms a distinct barrier between the large Peshawar and Bannu Basins which lie to the north-east and south respectively. To the west the district is interposed between the independent tribal peoples of the Tirah and the northern Wazirs, while to the east its hills and their continuation in Attock are cut by the Indus gorge. The hills in this part also form a sharp boundary with Mianwali, the only Punjabi District to have territory on the west bank of the Indus.

Unlike the Kurram valley, where a specific soil grouping was tantamount to a revenue division, the Assessment Circles in Kohat District have been formulated on a much broader physical basis and therefore include, in addition to soils, surface features and drainage. By examining these divisions it becomes possible to make a much more systematic and worthwhile analysis of Kohat District's geography.

Assessment Circles.

1. *China*—the word itself means spring and is actually an extremely fertile but small circle in the north-west corner of Kohat Tahsil. More than half the cultivated area, it is irrigated by springs which appear along the edges of the Kachai and Marai valleys.

2. *Toi*—as its name implies, this circle is essentially coterminous with the Kohat Basin and as such contains some of the best agricultural land in the district. About three-fifths of the irrigation carried on here is dependent on water from the Toi, while the rest comes from springs. Soils here are generally a good loam, fertile and easily worked.

3. *Kohi*—again the name of this circle indicates the physical character of the area, i.e. a bare, bleak hilly piece of country. It lies in the extreme north-east corner of the district adjoining Peshawar District. In 1905 cultivation amounted to only 7,375 acres out of a total of

nearly 90,000 acres, of which only 100 acres were irrigated.[3] Given the limited area available for cultivation, it is highly likely that these same statistics are still applicable.

4. *Shakardarra*—like Kohi this circle forms another detached portion of Kohat Tahsil, only in this case it lies along the Indus in the south-eastern corner of the district. Round the main village of Shakardarra there are fine stretches of open land and good soil, but towards the river the country is precipitous and desolate. All the land is baranni so that cultivation is possible only on about 5 per cent. of the circle's total area (108,700 acres).

5. *Kuz Miranzai*—this is the eastern portion of the Miranzai valley. Above the village of Sherkot near where the circle begins, the valley of the Kohat Toi narrows considerably and cultivation is limited to the immediate few hundred yards on either side of the river until several miles east of the large town of Hangu it again widens out several or more miles. In this circle, spring irrigation is important, especially near the point where the Kohat Toi is joined by the Khanki Toi, a large tributary draining the southern Tirah.

6. *Bar Miranzai*—occupies the western and more open section of the Miranzai valley. It begins at the low divide near the village of Kahi about twelve miles west of Hangu and stretches almost to Thal on the Kurram River. Although broad, open and treeless, this remarkable plain shows little of the harmful effects associated with ravine action except in its western section. Drainage is towards the Kurram River by the Ishkala nullah. Cultivation is limited to the immediate vicinity of the riverain areas; soils otherwise are too gravelly to permit extensive cultivation. Large parts of this valley are a government reserve forest for the dwarf palm 'mazri', whose leaves when young are used by the local inhabitants in the manufacture of shoes, ropes and mats.

7. *Samana*—comprises only seven small villages on the southern slopes of the Samana ridge. Cultivation here is limited to small terraced fields reclaimed from the lower hillsides.

8. *Seni-Kharram*—occupies the north-eastern portion of Teri Tahsil. On its eastern side where it separates the Kohi and Sakardarra circles from the rest of Kohat Tahsil the country is extremely hilly

[3] Barron, C. A., *Settlement Report of the Kohat District, 1900–1905* (Lahore: The Civil and Military Gazette, 1907), p. 27.

and desolate. In 1905 less than one seventh of the circle was cultivated,[4] and because of serious erosion problems in this area the amount of land cultivated today may be even less.

9. *Darra*—is a western continuation of the previous circle and therefore makes up the remainder of the northern half of Teri Tahsil. It lies between the Miranzai valley and the Mirandai range with the independent Naziri country on its western border. In this circle are located the village Teri, headquarters of the Khattak Khan, and the important stream, the Teri Toi. Cultivation is limited to the riverain tracts and isolated plains tracts and is almost entirely baranni.

10. *Nari—Chauntra*—the Nari part of this circle consists of a series of upland plateaus; Chauntry is a broad fertile valley with a light soil, sloping gently towards the west. Known as the 'granary' of Kohat, the Chauntra valley has long been famous for its 'Khattaki' wheat. Except in the north-east corner of the circle, the drainage is towards the Kurram. Almost all cultivation is unirrigated.

11. *Lawaghar*—or high hill circle as the name actually means, includes the country occupied by two lofty ranges—the Shinghar and the Surghar. These hills separate Kohat district from the Isa Khel Tahsil of Mianwali. The greater part of the circle is nothing but an intricate mass of ravines and precipices. Agriculture is almost nominal here, the main occupation of the inhabitants being grazing (goats and sheep) and the collection of firewood.

12. *Thal*—is quite distinct from the rest of the district, since it really forms a part of the Marwat plain which, under exceptional rainfall conditions, produces excellent crops of wheat and grain. Irrigation is on occasions limited to local damming of hill torrents from the Chauntra and Lawaghar hills before they debouch on to this plain.

In summarizing the administrative divisions of Kohat district it can be said that Hangu Tahsil is practically definable by the limits of the 45-mile long Miranzai valley. The Teri Tahsil, which contains a little more than half the total area of the district, embraces its more hilly southern portion excluding Shakdarra circle. With the exception of the two detached circles bordering the Indus, i.e. Kohi and Shakardarra, Kohat Tahsil generally encompasses the area occupied by the Kohat Basin.

[4] *Ibid.*

Climate. Since a little better than 10 per cent. of the total land under cultivation is irrigated it hardly seems necessary to mention the importance of climate to this district. Of all the districts on the Frontier, Kohat probably exhibits the most extreme variations in season temperatures. Winters are quite cool, temperatures often sinking to the middle 30's in January and February. Heavy falls of snow take place on Samana, and even the hills surrounding Kohat City are white-capped for short periods of time. It is summer, however, which is really the trying period, especially in the shadeless, rocky expanses of Teri Tahsil. By June most streams have dried up in the district and drinking water becomes so scarce that people can be seen at night digging for it in the nullahs under the hills. Most of the rainfall comes during the high sun season and is so capricious in nature, that the particular strike of a hill can mean one valley getting an excellent shower while the next does not receive a drop.

History. Not much is known about the history of the district before the two principal tribal groups, i.e. Khattaks and Bangashes, moved into the area. Of the two Pathan tribes the Khattaks probably came first. Their original home appears to have been in the Shawal valley in Waziristan, whence they moved and occupied the country near Bannu about the thirteenth century. Here they remained until the beginning of the fourteenth century, when they in turn were driven eastwards by the Bannuchis and took possession of the southern portion of the present Kohat district.[5] Today this tribe owns about two-thirds of the entire district plus large portions of Nowshera Tahsil in Peshawar District; the former group living in Kohat are known as the Baraks and the latter in the Peshawar Basin as Akora Khattaks.

The other main tribe is that of the Bangashes, who with their allies the Niazis own practically the rest of the district. They first came into the district sometime during the fifteenth century as an ally of the Khattaks against the Orakzais who were gradually driven into the hills, i.e. the southern part of the Tirah, north of Kohat. Many more Bangash came into the district in the eighteenth century as a result of their dislodgement by the Turis in the Upper Kuram valley. Whereas the Bangash speak the hard 'pakhtu' of Peshawar and Kabul, the Khattaks and Niazis talk the rough but softer dialect associated with Kandahari 'pushtu'.

The division of land among the tribal people of this district, as it is over most of the remainder of the Frontier, is essentially on a communal basis. This is probably a result of the Pathans living in such

[5] Government of India, *Pathans* (Delhi, Manager of Publications, 1938), p. 69.

close proximity to each other. On the whole, village land is in the first analysis divided into lots termed hereditary possessions or 'daftar'. This again is divided into family lots termed 'brakha', and finally into individual plots called 'patti'. In addition to these distributions, 'seri' or rent-free lands are given to mullahs and others of the holy classes. Among the Khattaks, subsequent settlers do not have the status of full proprietors with a voice in the village councils. Inferior to these again are the mere tenants, either with or without rights of occupancy.

Commerce and Transport. Located in Kohat Basin immediately below the steep 2,866-foot pass (Kohat) which leads through the northern-skirting Afridi hills into the Peshawar Basin, is the district's leading administrative and to a lesser extent commercial centre, Kohat City. Together with its large cantonment the city has an estimated population of 75,000 persons. Because of its excellent communication links with the Afghan border and tribal areas immediately to the west, including a metre-gauge railway line via the Kohat Toi and Miranzai valley to Thal, Kohat City has always ranked with Malakand and Peshawar in strategic importance. The fact that a first-class military airfield is located here fully supports this view.

Besides connecting Kohat City with Thal, the same metre-gauge railway line, together with a metalled road, extends to Khushalgarh where a bridge over the Indus provides direct access to the Punjab. Excellent metalled roads also connect Kohat City with Thal to the west, Peshawar to the north and with Bannu, via the rock salt quarries at Bahadur Khel, etc., to the south-west. Other important towns in the district are Hangu, Thal and Lachi. As agricultural marketing centres these regional towns are in many ways far more important commercially than Kohat, which is limited in its influence to the Kohat Basin.

Summary. A comparison of statistics between 1905[6] and the period 1945–52 (based on a seven year average)[7] will show immediately the immense difficulties currently facing this district. The combined acreages sown to wheat, maize and bajra (the district's three most important crops) in 1905 were approximately 192,000 acres,[8] whereas during 1945–52 the annual average for these three crops in Kohat

[6] Barron, C. A., *op. cit.*, pp. 18, 30, 32.

[7] Statistical Office N.W.F.P., *Agricultural Statistics 1945–52*, Bulletin No. 1 (Peshawar. Government Printing and Stationery Office N.W.F.P., 1954), pp. 1–39.

[8] The actual figure given in this case was 159,992 acres but, since this was the average area successfully harvested, an additional twenty per cent. was added to represent the usual acreage that failed. This brought the total to 192,000 acres.

District was only 212,000 acres. If yields are taken into consideration a more significant comparison can be made, for in 1905 irrigated land under wheat is estimated to have yielded 10.5 maunds per acre, while bajra was 12¾ on the same kind of land; on unirrigated land wheat and bajra yields were both 6 maunds per acre. In the 1945–52 period, the outturn of wheat and bajra on irrigated land was only 9.1 and 9.6 maunds per acre, while the unirrigated tracts yielded only 4.6 and 3.4 maunds per acre respectively.

In themselves the above statistics produce a most dismal picture, but when these are related to the district's increased population the whole situation takes on a terribly menacing aspect. The first population statistics date from 1881, at which time there were an estimated 171,620 people living in Kohat District. In 1901 this had risen to 217,865, in 1931 it was 236,273, then to 289,404 in 1941, 380,000 in 1951, and by 1961 the population had shot up to something over 550,000 persons. Under such circumstances it is understandable why such a considerable amount of government subsidization and direct grants-in-aid are necessary to this district. Instead of making an all out effort to try to halt this dangerous trend, the Central Government seems reconciled to a policy of shouldering the district's economic burdens for a protracted period of time.

Sample Surveys In Kohat District

The villages of Teri, Darband and Bahadan Mohammed Ali Khan Bangash were selected for sampling because they were thought to reflect village conditions in the district's following main physical regions: Kohat hills, Upper Miranzai valley and Kohat Basin respectively.

1. *Teri* is a rather large high-walled village located atop a knoll along the Teri Toi stream in the central part of the Kohat hills. It is the cultural centre for the Khattak people in Kohat District, and as such all jirgas involving this tribe are held here. Of the 1,500 houses (about 7,000 persons) in this village all are Khattak with the exception of twenty Afridi and Orakzai families, who live throughout the winter within the village in 'kutcha' houses. These migrant families are engaged either as labourers, or else they are charged with the task of collecting firewood from the nearby hills.

The total amount of land under cultivation by this village is about 25,000 kanals (3,000 acres). Of this amount only 12 acres are irrigated, the rest being baranni and extending outward from the village to a radius of about 4 miles. 6,250 kanals of the total are held by the local hereditary ruler, the Nawab of Teri, who also holds the 12 acres of irrigated land. Previously this once powerful local ruler even owned a great deal more land, but government pressure forced him to sell a considerable part of it. In 1955 he lost his 85,000 rupees per year annual stipend from the government.

Wheat, as one expects, is the main rabi crop, but instead of maize (actually none is grown here) the village relies on bajra as the main kharif crop. The absence of maize as well as the extremely low yields of the main crops, i.e. wheat, 4½ maunds per acre, and bajra, reflect the poor physical condition under which agriculture is carried on here. Barley and pulses are the usual secondary crops grown. Another indication of the poor growing conditions can be seen from the tenancy rates. The owner gets only a quarter of the harvest and what is more even pays the land revenue tax, whereas the cultivator gets three-fourths of the yield after supplying his own seed and animals.

Some village elders estimated that in a family of 8 about 3 male members were required to seek service outside the village, i.e. in the army, police, as labourers, etc. in order for the family to stay solvent. These conditions are further represented in the village's ability to satisfy only half or even less of its minimum food requirements. The village leaders also stated that only 2 persons in the entire village had received higher education, and that farther in the interior the Khattak villages were in a much poorer state.

Although the villagers of Teri believe that the construction of a dam on the toi would be of immense value to them there are no plans yet envisaged by the Central Government for such a project. Under present conditions the village is losing a considerable amount of land each year as a result of summer convectional shower floods. Under such circumstances the village can be cut off from the main road for days at a time.

2. *Darband* is a Sunni Orakzai village of 300 houses located about 10 miles to the west of Hangu on the northern edge (below the Sumana ridge) of the Upper Miranzai valley. This village accounts for 4,000 acres of baranni land plus 1,000 acres of 'jungle land'.[9] Being baranni, land holdings are on the average large, i.e. ten acres per family, which to a considerable extent are privately owned. Owing to poor growing conditions, only half of the available agricultural land is being farmed at any one time. This is usually given to maize and wheat, which both yield an average of about six maunds per acre. As in Teri it is also necessary in Darband to import at least half of its food needs and to send almost the same percentage of the men in a family in search of external service. This village, in addition, gets an indirect subsidy from the government, in the form of revenue from the nearby government forest preserves. In this instance, a certain percentage of the profit realized from the collection of 'mazri' and firewood is paid by the government contractor to Darband village.

Because it lies on the edge of the Tirah, this village acts as a trans-shipment point for goods moving into and out of the Khyber Agency. As an Orakzai village though, most of their trade is connected with their 'independent' tribal relations rather than with the Afridi. A great deal of the trade involves the famous Tirah potato, in exchange for which tea and cloth etc.,

[9] Local term for poor rough hilly land useful for a limited amount of grazing and for firewood collection, but not for cultivation.

are carried into the Tirah. But Darband villagers may trade openly and unmolested in Tirah, only on Thursday, Friday and Saturday. If they are forced to stay longer they must put themselves under the protection of a local malik, either to remain there or else to try to return on a 'non-open' day.

3. *Bahadan Mohammed Ali Khan Bangash*, as the name implies, is a small 'family' village which bears the name of the man who established it in 1910. It is to be found in the Kohat Basin about 5 miles east of Kohat City along the Kohat-Khushalgarh road.

Three related Bangash families today jointly own all of the village land which comes to 100 acres of irrigated land, plus 90 guava trees.[10] In addition to the 3 land-owning Bangash families there are 17 tenant families living in this village: 3 are Afridi, 2 Awan, 11 Sheikh[11] and 1 is Khattak. In addition, 2 Powindah families (Jadran) occupy the same 'kutcha' winter quarters every year for which they pay a total of 6 rupees rent each month. Being traders and not labourers, they stand quite aloof from most village activities. Before returning to the cooler Afghan hills in the early spring, they reassemble with other Jadran Powindah families living in nearby villages under similar conditions in order to be able to travel together in a large group.

Tenant families in this village farm on the average 5 acres of land. The harvest is shared on a fifty-fifty basis with the owner here paying the land revenue and the tenant providing the cattle and seed. Only maize and wheat are grown; the yields averaging 10 maunds per acre for wheat and 15 maunds per acre for maize.

The tenants of this village estimate that a family needs about 25 maunds[12] of food grains in order to subsist for a 6-month period. This works out to something like half a seer[13] per day per man. Since a normal harvest yields about 100 maunds for 40 kanals of land per family, out of which half goes to the owner, it means that roughly 25 maunds are available for sale in the Kohat bazaar. At the current market price of 20 rupees per maund of wheat (17 rupees per maund of maize) a family in this village can realize 500 rupees in a normal 6-month period. Out of this amount, of course, must come all of their additional food and other needs.

[10] Each of which realizes fruit worth about 350 rupees per year.
[11] Locally this term means a recent convert to Islam from Hinduism.
[12] One maund equals approximately 82 pounds.
[13] One seer equals approximately 2.2 pounds.

V

THE CENTRAL HIGHLAND AND HILL ZONE

THE Central Highland and Hill Zone typifies several important features of the NWF as a whole. It contains the famous Khyber Pass connecting the highlands of Afghanistan with the subcontinent. Its mountain elevations are formidable, including the towering Safed Koh on the Afghan border itself, and the Khyber and Kohat hills which march eastward and southward toward the Indus River.

Economically, the region's potentialities are extremely limited. Its rocky, mountainous terrain affords little arable ground level enough to cultivate. Erosion has already decimated much of the area and continues to take a heavy toll, especially with the absence of any effective conservation measures.

The population of the Tribal sections of this zone—particularly the numerous and powerful Afridi tribes—have exploited to the fullest their strategic location and neglected almost entirely the more humdrum tasks of everyday economic activity. In recent years, however, the strategic importance of the passes has diminished in direct proportion to the advance of military technology, and the tribes now most realistically have to find more secure economic roots in their environment. As a consequence, they have become increasingly dependent on aid furnished by the government and those of their members who remit funds earned outside the area.

One important geopolitical aspect to life on this part of the Frontier, however, persists in the 'Pakhtunistan' question which involves a movement to detach the Pushtu-speaking tribes from the control of Pakistan. Partly as a result of government's sensitivity to this issue, the tribes have been permitted to continue their largely independent ways, provided overall governmental authority and occasional access are not frustrated.

SAFED KOH, TIRAH, AND THE KHYBER HILLS

Safed Koh. Extending across the central portion of the NWF is the great Safed Koh range. Although treated separately here because of certain fundamental differences in their character and function, the Tirah and Khyber hills nevertheless also form an integral part of this system. A series of parallel ranges of lesser elevation, they flank the main axis of the range on both its northern and southern margins.

Taken together this mountainous tract effectively divides the valleys of Jalalabad, Peshawar and the upper Kurram, and in addition constitutes the rugged homeland for such powerful independent tribal groups as the Afridi and Orakzai.

Although it is a commonly held view that the main axis of the Safed Koh starts at Peiwar Kotal at the head of the Kurram valley, Griesbach traces its origins to an area north-east of the Afghan city of Ghazni.[1] The greater part of the range is covered with snow for all except a few months of the year. It attains its highest elevation soon after becoming a natural boundary between Pakistan and Afghanistan when it reaches a height of 15,602 feet in a peak called Sikaram Sar. While acting as a frontier the range averages about 13,000 feet; where it becomes the Surghar range farther east its elevation decreases rapidly until it slopes abruptly as a mountain wall beside the Kajuri plain on the south-western edge of the Peshawar Basin.

Tirah. This is a regional term, which in spite of the wide popular usage it enjoys is rather vague when it comes to denoting a physiographic region. Paget and Mason think of it as an area encompassing those valleys 'lying near the sources of the Bara River',[2] while F. G. Marsh talks of it as the home country of the Afridi and Orakzais and embracing 'the whole of the mountainous tract south of the Khyber Pass and north of the Samana ridge.'[3] For the purposes of this study the Tirah is taken to include the three main ridges and four troughs located between the Samana range (north and west of the town of Hangu) and the southern slopes of the Safed Koh. Skirting the southern margins of the Safed Koh, in a course more or less parallel to the main axis of the system, are the following ridges and troughs starting with the Samana range on the extreme south:

1. Samana range (Orakzai hills)
   a. valley of the Khanki River.
2. Tsappar range
   b. valley of the Mastura River.
3. Torghar range
   c. the western section of the Torghar range separates the Maidan-Waran valley from that of the Mastura.
   d. the eastern section of the Torghar range separates the Bara valley from that of the Maidan-Waran.

[1] Griesbach, C. L., 'The Geology of the Safed Koh' (*Records of the Geological Survey of India*, Part 2, May 1892), p. 104.

[2] Paget, W. H. and Mason, A. H., *A record of the Expeditions Against the NWF Tribes* (London, Whiting and Co., 1884), p. 270.

[3] March, F. G., 'The Afridi and Orakzai Country', *The Army Review*, Vol. VII, No. 1, July 1914), p. 22.

Immediately to the north of the Bara River is the main Safed Koh-Surghar range.

In a broader sense the anticlinal folds of these southern skirting ranges are considered by Griesbach to extend from the Afghan city of Gardez eastwards through the Orakzai hills, the Afridi ranges (local hill country in the vicinity of the Kohat Pass) and eventually to end at the Indus in the subdued forms of the Khattak hills.[4] It is not yet known what connection these ranges have with the north-south trending Sulaiman system.

In contrast to the Paleozoic composition of the main axis and the northern skirting Khyber hills, the southern zone's sedimentary rocks are chiefly of Mesozoic and Tertiary age. Mesozoic strata in this case usually form the anticlinals, while the Tertiary formations flank their lower sides. In many instances the anticlinals of this zone have been highly contorted, as witness the nearly vertical-dipping strata in the Kohat Pass. These southern ranges are also separated from the main axis of the Safed Koh by a long line of faults.

An important characteristic of the ranges which comprise the Tirah is the steep scarps they present to the south in contrast to their more or less gently sloping northern faces.[5] This factor is particularly evident in the rapid transition that takes place between areas in the Miranzai valley and those above the Samana ridge.

With the exception of the Waran, Maidan and portions of the Bara, the longitudinal valleys of the Tirah offer very little level land. In addition the valleys are to a large extent isolated from each other by the intervening ranges, lateral communications being limited to very few passes. The Bara is by far the Tirah's most important river. Though it receives a great part of its volume from the Mastura River some 8 miles before it enters the Peshawar Basin, the Bara River itself derives its origins from the Raj Tahl, a stream issuing from the Safed Koh near the 11,620 feet Mamun Pass. All of the rivers in the Tirah exhibit considerable evidence of post-Tertiary deposits. This is seen especially well in the Maidan valley where horizontal beds of clay, grit and conglomerate extend for many hundreds of feet up the hillside.[6]

Khyber Hills. Bounded on the north by the Kabul River, and on the south by the slopes of the Safed Koh, the Khyber hills are in reality nothing more than a north-eastern offshoot of the parent range.

[4] Griesbach, C. L., *op cit.*, pp. 67, 93 and 95.

[5] Hayden, H. H., 'On the Geology of Tirah and the Bazar Valley' (*Memoirs of the Geological Survey of India*, Vol. XXVIII, 1900, p. 97).

[6] *Ibid.* p. 114.

Even in their geological make-up the Khyber hills are much more closely connected with the main axis than the more extensive series of subordinate ranges to the south. In this instance both the northern skirting ranges and the main axis contain a large proportion of rocks of Paleozoic origin, whereas 'south of the Bara River no rocks older than Mesozoic are found.'[7]

In essence the Khyber hills represent the highlands which divide the Khyber from the Bazar valleys. Composed largely of highly altered carboniferous material, these hills dip southward into a synclinal trough which today is occupied by the Bazar River.[8] As in the case of the Tirah Rivers, the Bazar is also covered with extensive deposits of post-Tertiary material.[9]

Elevations in the central portion of the Bazar valley average 3,000–4,000 feet in contrast to valleys of the Tirah proper which are generally 2,000–3,000 feet higher. From the little evidence that emerges about this entire region it would seem that the Khyber hills are practically barren, whereas many hills in the Tirah, especially the more secluded valleys, remain still forested.

KURRAM VALLEY

The Kurram River has its origins in the western extensions of the Safed Koh. It flows through Afghanistan in a circular course for 40 miles before breaking through the Mandher range (9,000–10,000ft.) and entering the western end of the Kurram Agency near the village of Kharlachi. For the first 10 miles of its course inside Pakistan the Kurram River flows due east through an 11-mile wide basin commonly referred to as the Parachinar plateau. This almost treeless, rock-strewn and ravine-cut plain encircled by mountain ranges, with the 15,000 feet peaks of the Safed Koh towering high, is a most impressive, almost unearthly sight.

It seems clear that at a relatively recent period the Kurram River had its course somewhere through the central part of the Parachinar Basin, instead of flowing as it does now along the base of the southern flanking Charmagh and Inzar Thar ranges. This change in its course is thought to result from the unequal quantities of sediment that have been deposited on the Basin floor; the tremendous amount of debris carried by mountain torrents debouching on to the plain from the northern or Safed Koh side far exceeds deposition from the 6,000–7,000 feet ranges on the south.

[7] *Ibid*, p. 117.
[8] Griesbach, C. L., *op. cit.*, p. 89.
[9] Hayden, H. H., *op. cit.*, p. 114.

From the time it makes its entry into the Agency until it is joined by the Kirman Toi some 12 miles downstream, the Kurram River runs due east. Then the valley narrows to a breadth of about 4 or 5 miles and runs in a south-easterly direction towards the large village of Sada. It is here at Sada, where it picks up the drainage of the Khurmana River, that the Kurram leaves behind the wide expanses of the Parachinar Basin to pursue a narrow southerly course all the rest of the way to the Bannu Basin. Although the valley widens out to a mile or two at places like Thal City, it is nevertheless hemmed in during most of the remainder of its course by rugged stony hills. On the west these hills are low, with a certain amount of undulating ground and plain intervening, till they rise to form the Khwaja Kurram range, beyond which lies the Afghan province of Khost. To the east the ground rises rapidly to a series of ridges and hills which are a south-western extension of the Tirah. From the presence of large-scale deposits of conglomerate in these skirting hills, it would seem that the Kurram at one time flowed at a much higher level. That portion of the Kurram valley stretching from the head of the valley to Sada is popularly known as the Upper Kurram, whereas from Sada to the Bannu Basin it is usually called the Lower Kurram.

Except from the Kirman and Khurmana 'tois', which are perennial and flow into the Kurram in continuous streams, there are no tributaries to the river, although it receives rainfall drainage from the neighbouring hills through innumerable ravines. Both of the main tributaries mentioned drain the southern slopes of the Safed Koh, and are liable to sudden violent floods. There are also numerous springs to be found on both sides of the river.

KHYBER AGENCY

Probably less information is available from inside sources about this independent tribal area than about any other in the entire Frontier, but, because of the unusual interest attached to the pass running through it, the Khyber Agency is also perhaps the only place in the NWF well known to the outside world. Curiously enough the Khyber Pass was seldom used as an invasion route into the sub-continent largely because of the existence of the easier and less troublesome Kandahar route. However, as the main means of access today for overland transport between the sub-continent and Afghanistan (and Central Asia), its relative importance can hardly be denied.

Acting as the self-appointed guardians of the Khyber are the Afridi tribes, estimated at 200,000 strong.[10] The 8 powerful sections which

[10] Mian, N. I., *A Preliminary Economic Survey of the Tribal Areas Adjoining W. Pakistan* (Peshawar, Peshawar University, 1956), p. 38.

make up the Afridi nation have long held the centre of the stage in the drama of Frontier politics by their control of three important passes, their fighting strength and the inaccessibility of their mountainous homeland. Even today they constitute one of the most formidable fighting units on the Frontier, and the fact that they are one of the few large tribes capable of concerted action makes them an even more potent force. Besides dominating the vicinity of the Khyber, the Afridis also hold most of the rest of the Agency, which includes portions of the main Safed Koh range.

In the east they are bounded by the settled districts of Peshawar and Kohat; on the north they have the Mohmand tribes as neighbours; west, the Shinwaris; and south, the Orakzais and Bangash.

Though collectively bound to each other by common descent and therefore capable of combining against a common enemy, the Afridis, like most of the independent tribes, nevertheless form distinct communities governed by tribal chiefs. Relationships within the tribe itself follow a similar sort of pattern. Each tribe consists of a number of families which form separate but concordant societies, and, in matters that affect the interests of all alike, confederate under the elders of the senior family.[11] Although there are hardly any inter-tribal conflicts, Afridis are known to feud constantly among themselves. In certain instances, however, where the general interests of the whole tribe are concerned, the 8 clans ordinarily range themselves in the two great factions of either Samil or Gar. The exception to this is the Adam Khel clan of Kohat Pass who side with one or the other as their interests dictate. This tribe, however, is not regarded as truly Afridi except perhaps from a strict racial point of view.

The majority of the Afridis are migratory, the clans descending in winter from the snow-bound highlands of Tirah, bringing their flocks and herds to graze in the low country round Peshawar and Kohat, and returning to the hills before the pre-monsoon hot season enters its most trying period in late spring. Although their main winter camping areas in the Kajuri and Aka Khel plains are physically a part of the Peshawar Basin they have never been incorporated into Peshawar District. They remain tribal, but only on the condition that Government authorities have unrestricted access. This condition was made in order that the region should not be used as a staging area by tribal forces bent on attacking the administered districts.

As indicated earlier the Tirah is thought to include the mountainous tract which extends northward from the Samana ridge to the southern slopes of the Surghar range. With the exception of the Maidan and Rajgul (Bara) valleys, the rest of the Tirah is occupied by different

[11] India, Government of, *Pathans* (Delhi, Manager of Publications, 1938), p. 15.

sections of the Orakzai trbe. This includes a part of the Waran, the Mastura, the Khanki, the Khurmana and Kirman valleys as well as the Samana ridge area and parts of Kohat District along the foothills.[12] As to settlement, the most important valley in the highland portion of the Khyber Agency is the enclosed circular basin of the Maidan. Standing at an elevation of about 6,000 feet, the richly endowed Maidan is drained by four watercourses which converge to form the Shilobar Toi. This torrent leaves the valley in a 1,000 feet deep rocky gorge before joining the Rajgul at Doatoi village some five miles farther downstream. At this juncture the united drainage of the Rajgul and Maidan becomes known as the Bara River.

On its northern side the Bara is hemmed in during most of its course through the Tirah by the Surgar range (at this point averaging 6,000–7,000 ft.) which also divides it from the Bazar valley. To the south the Bara is flanked by a range 8,500 feet near Maidan, which falls gradually as it runs eastward. These ranges now close in on the Bara, thereby forcing it into a narrow defile, thus producing a series of small alluvial basins throughout the length of its course in the Tirah.

Except for the Maidan and the small isolated alluvial basins found along the Bara and Waran Rivers, little else in the way of level arable land exists in the Khyber Agency. Cultivation in those basin areas is devoted to summer crops of rice (where sufficient irrigation water is available), maize and millet and, where the land is not too high, winter crops of maize and barley are planted. Potatoes—for which the Tirah is famous—are mainly grown on the more rugged hillsides. Being migratory in character, the Afridis depend for sustenance as much on their livestock as on their food crops. Because of deteriorating agricultural conditions, however, many tribesmen are now finding it necessary to engage themselves as tenant farmers to the more prosperous Khans of Peshawar District.

Apart from the excellent metalled road linking Peshawar with Kabul via the Khyber Pass, no other road of a maintained category (gravel or otherwise) exists within the Agency, but many local tracks do exist. The main ones begin in the Khyber area and converge on the village of China in the Bazar valley. From here the main route to the Maidan leads over the broad 5,500 feet Jarobi Pass into the Bara valley, thence to Doatai at the junction of the Rajgul and Maidan streams. The other prominent route to the Maidan from the settled districts follows the course of the Bara River from the Kajuri plain.

Except for the sale of firewood and the making of mats and rope from Mazri (dwarf palm) the people of the Tirah have little else to

[12] Barton, W., *India's N. W. Frontier* (London, John Murray, 1939), p. 48.

trade in exchange for the manufactured goods they require from the settled districts—although the tribal people are involved in a considerable amount of smuggling (including the transport of narcotics). There has, however, been a significant development in the way some have taken to commerce, i.e. trucking services. Energetic Afridis and Shinwaris are now to be found plying throughout West Pakistan with their trucks. Before the border with Afghanistan was closed they also dominated goods traffic hauled through the Khyber.

Probably the most important issue affecting the future development of the Khyber Agency concerns the utilization of some 93,000 acres of land now under irrigation in the Kajuri and Aka Khel plains as a result of the recently constructed Warsak dam. Provided this dam's new high-level canal scheme is efficiently administered so that the rank and file of the tribes benefit and not just a few prominent tribal maliks or corrupt speculative landlords in Peshawar, this project could bring the Agency a considerable measure of stability. It could also greatly reduce the wasteful practices associated with yearly migrations and give the tribesmen a new sense of worth by reducing their mounting dependence on outside sources of income.

Interview with Malik Jaffar Khan of the Aka Khel Afridi tribe 22 Nov. 1960

Since it is not possible for government officials, let alone an unofficial research scholar, to visit the interior of the Afridi country (in many cases this applies even to officials of Afridi descent) the following interview conducted in Peshawar with the leader of an Afridi tribe, the Aka Khel faction, was thought to be of considerable value.

Malik Jaffar Khan's tribe consists of about 4,000–5,000 people. Although he is a 'Khan' (leader) by inheritance and has held the position for the past 23 years, this Afridi chieftain was quick to point out the tenuous nature of his authority. He made it quite clear that his success as tribal head was based entirely on his ability to convince his followers that he was a worthy leader for them. Because an Afridi tribesman considers himself the equal of every other man, tribal leadership is understandably far less stable here than in most other areas in the independent tribal zone. This has particular significance in view of this tribe's continued efforts to resist even the most innocuous forms of Central Government control.[13]

In order to escape the rigours of the Tirah's bitterly cold winter

[13] The Pakistani Government has been refused permission by a 'Jirga' of Afridi tribal leaders to build a road through their territory from Ali Masjid to Parachinar. The construction of such a road would have meant a saving of about 70 miles in the driving mileage from Peshawar to Parachinar.

weather, about 60 per cent. of Malik Jaffar Khan's tribe migrate to the warmer Kajuri plain adjacent to the Peshawar Basin. Since this trek is made regularly each year the tribe has constructed what amount to permanent dwellings in their lower winter quarters. Their summer settlements are located near the head of the Mastura valley about 3 miles from the large Afridi village of Bagh. Seasonal migrations are usually made in batches of 20–30 families, all of whom take all their cattle with them. Foodstuffs are limited on these journeys to the barest necessities.

Malik Jaffar Khan stated at the outset of the interview that his people are not self-sufficient, and in fact derive their main source of income from the cash remittances sent by members of their tribe serving in the army and police, etc. He claimed that this dependence on outside sources is being combated to a certain extent by a limited amount of farming and by winter trade in firewood, which is brought down from the hills to the wood-scarce settled districts. With regard to food, the tribal leader estimated that his people were about 50 per cent. self-sufficient. There is some farming, he said, in both their winter and summer quarters, the most important crops being jowar (millet—the main kharif crop), wheat (principal rabi crop), potatoes and fruit. He admitted, after being questioned several times about it, that some of his people were growing opium. Since irrigation is totally lacking in both areas, it is understandable that yields are extremely erratic on these baranni croplands.

Malik Jaffar Khan related how his people just before leaving their summer quarters plant a crop of wheat and often some vegetables, and then repeat the same process in the Kajuri plain. Immediately before starting back to the Tirah they harvest the rabi and then plant a crop of jowar,[14] which is reaped on their return the following September. Similarly, after harvesting whatever survives the hard Tirah winter, a kharif crop is planted (usually jowar again) which is gathered before the journey to their winter quarters. By farming two complete sets of fields the tribe manage to double their yields, which are still thought to be only half the normal crop yields in the Peshawar Basin. Not all the land, however, is double-cropped since the interests of even a minimum amount of soil fertility require some plots to be left fallow.

Malik Jaffar Khan boasted that none of his tribe's land is guaranteed or even acknowledged in any written records. Instead, all ownership is based on local custom.

He clarified this point somewhat by stating that his people were

[14] Jowar, together with bajra, are millets usually planted when growing conditions are too difficult for maize.

quite prepared to defend by force what they 'had acquired through historical use'. Occasionally, he said, they have had trouble with their Orakzai neighbours, but Jirgas have usually settled any real difficulties. He then added with a smile that even if they disagreed with the findings of the Jirga, they would not dare attack for fear of retribution from the rest of the Afridi nation who, he claimed, were bound to come to the aid of his people under such conditions.

Towards the end of the interview, the tribal leader spoke about the large proportion of inter-tribal marriages and the fact that only male heirs could inherit their father's land. Even though all the sons get an equal share of the inherited land Malik Jaffar Khan maintained that land fragmentation has not yet become a serious problem with his people.

KURRAM AGENCY

General Setting. The Kurram Agency forms a thin wedge of territory about 70 miles long and in places not more than 10 miles wide. Jutting out in a north-westerly direction into Afghanistan, the border point at Peiwar Kotal lies no more than 50 miles from Kabul, the capital of Afghanistan. With the exception of the mountain ranges which flank it, the Agency is essentially coterminous with the valley of the Kurram River.

Historical Background. Most sources agree that the earliest Pathan tribe to inhabit the Kurram Agency were the Bangash. After being driven out of the area around Gardez in Afghanistan by the Ghilzais in the fourteenth century, these people gradually spread by stages into the Kurram valley. Towards the end of the fifteenth century, the Turi tribes began appearing in the valley as nomads seeking relief for themselves and their flocks from the extreme summer heat of the Indus valley. The Turis lived as 'hamsayas' (vassals) of the Bangash until the seventeenth century. By this time they had eventually gained control of all the chief villages in the Upper Kurram valley. In 1892 at the request of the Turi tribes who were Shias the British Government formally annexed the valley.

In spite of the fact that the Kurram Agency is still considered an independent tribal district, it is nevertheless administered along the same lines as any settled area alongside the Indus. The Kurram therefore becomes the only tribal area where the administration of the Central Government penetrates right up to the Afghan border.

Assessment Circles (natural features). Basic to any geographical analysis of this administrative division is a careful evaluation of its 3 assessment circles. Whereas in other districts the circle boundaries are

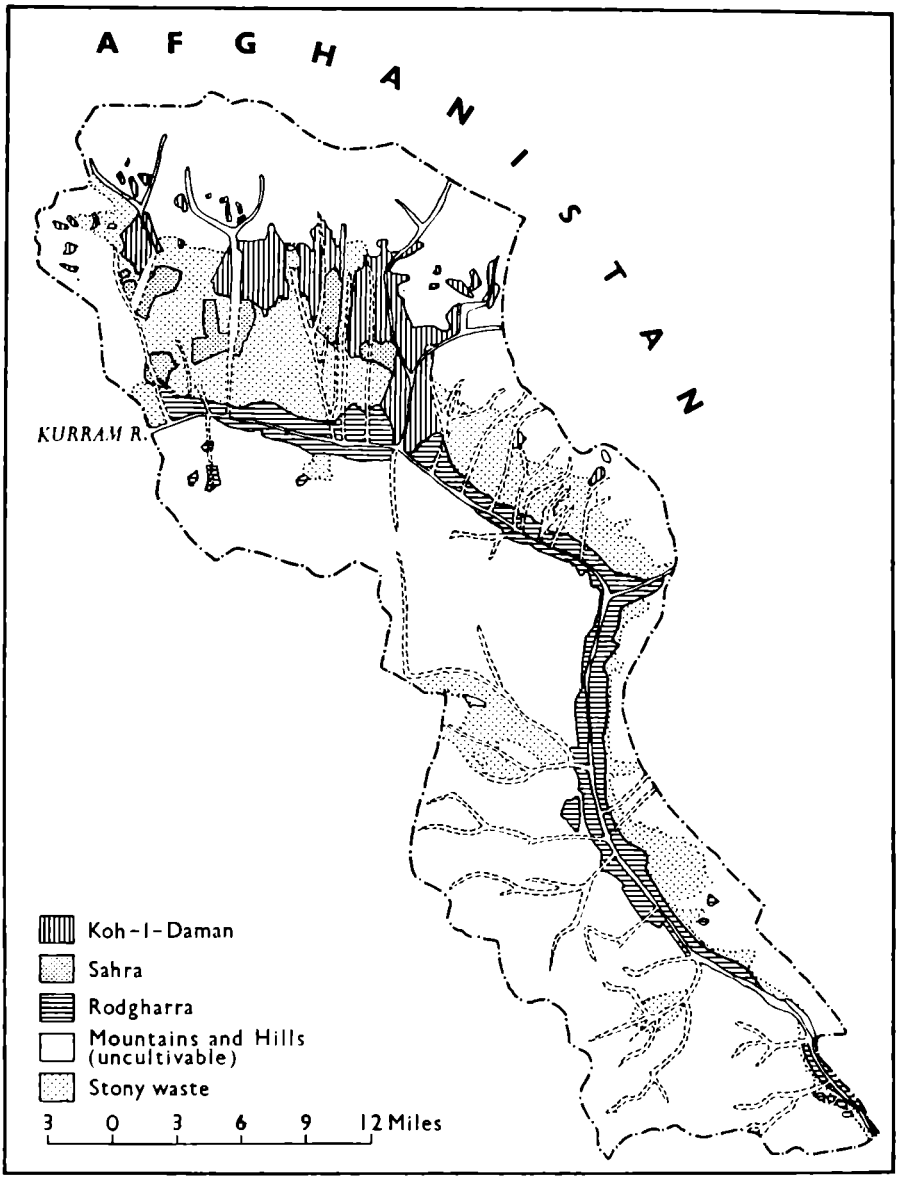

Fig. 17. Kurram Agency: Assessment Circles (Natural Features) (based on Second Regular Settlement Report 1942-4)

mainly concerned with revenue collection within the Tahsil and only indirectly with soil groups and drainage, those in the Kurram Agency are entirely identifiable with natural features. We therefore find that the assessment circles here actually represent the three most important physical features in so far as land use is concerned. These include: (1) the Koh-i-Daman, the sub-montane tract of the Safed Koh, (2) the Sahra, which is associated with the central plateau of Parachinar and (3) the lands commanded by the Kurram River.

Because they are correlated with physical features and are not based on arbitrary administrative boundaries, it is obvious from Fig. 17 why these circles present a very dispersed and irregular arrangement. It can also be seen from the Figure that the total amount of cultivable land actually makes up a small proportion of the Agency's total area. This probably is the very reason why the assessment circles were arranged in this manner in the first place.

As its name implies, the Koh-i-Daman circle comprises all the cultivable land in and at the foot of the mountain ranges which flank either side of the Kurram valley. As Fig. 17 shows, the land in this circle lies entirely on the northern (Safed Koh) side of the river and in the upper part of the Kurram valley. It is by no means continuous as one normally thinks of 'daman' land, but is either closely associated with the lighter soils of the larger 'tois' (hill torrents), or else is restricted to small isolated pockets where a limited amount of the finer alluvial detritus has had the opportunity to accumulate. Cultivation in this circle is understandably restricted to the less stony places and also to those areas which have irrigation water available. The water serving this circle, being so cold and siltless, requires more careful field preparation and a considerably heavier use of manure. In this circle are to be found most of the Agency's few remaining trees.

For about 11 miles after it emerges from the Mandher range and enters the Agency at the village of Kharlachi, the Kurram River forms a broad, open plain, which in certain areas reaches 12 miles in breadth. On its right bank the river is tightly hemmed in by the Khwaja Kurram range, but on the left it slopes up (1,500 ft. in about 10 miles) in an open expanse to the base of the mighty Safed Koh, which rises abruptly from the plain to an average height of 12,000–14,000 feet. Practically treeless this desolate, ravine-scoured, stony waste in the Upper Kurram valley is known as the Parachinar plateau and the assessment circle for it as the Sahra. Intermediate between the well-watered Koh-i-Daman land and the rich alluvial deposits alongside the river, and possessing a preponderantly hard and stony soil, the Sahra is the least fertile of the three circles. As it is dependent on

uncertain amounts of the surplus water from the daman villages above, nearly 27 per cent. of the land under cultivation in this circle is given as baranni.[15]

The most important circle is the Rodgharra which incorporates all of the cultivated lands which lie adjacent to and on either side of the Kurram River, extending from Kharlachi in the north-west to Thal in the south-east—a distance of about 60 miles. This is a tract of good loam with an excellent top dressing given by the silt-laden waters of the Kurram River. Nearly 98 per cent. of the area is irrigated by river or spring water; in most cases the canals utilize the general slope in order to gain the necessary head of power to carry the water to the intervening tracts between the hills.

Climate. As seen from Fig. 5, the upper portion of the Kurram valley receives a higher proportion of cool-season rainfall (October–May) than the lower half. Depending on whether the important spring showers of the valley are included, it also becomes possible to embody the lower part of the valley as well in this regime, even though this was not done in the Figure. Towards the end of December it begins to snow in the upper Kurram, which affects the 'rabi' crops in this area considerably until the beginning of March.

Though the valley is far removed from regular monsoon influence the summer rains arrive regularly and in sufficient quantity; only in 2 years out of 37 have there been less than 4 inches (normally the total amount is about 8 in.)[16] Converse to conditions in the Peshawar valley, rainfall is significantly heavier in the western sections of the Kurram, i.e. Parachinar City has a yearly average of 29.9 inches while Alizai receives 18.7 inches. The difference in this case is due to a much larger amount of winter precipitation being received in Parachinar than in the more easterly situated Alizai village.

Except for a comparative increase in the acreage given over to rice and pulses, both of which are the speciality crops of this valley, agricultural practices in the Kurram tend to duplicate those of the rest of the Frontier. Wheat is decidedly the most prominent rabi crop; maize according to the latest statistics (1960) holds top position only in the kharif of the Sahra and Daman circles. The acreage planted to rice nearly doubles that of maize in the important riverine tract of Rodgharra. The relative importance of kharif and rabi is about the same, although kharif continues to give a slightly bigger harvest and accounts for a larger percentage of cash crops. The usual rotations here

[15] Kapur, B. K., *Assessment Report of the Second Regular Settlement of the Kurram Valley, 1942–44.* (Peshawar, N.W.F.P., Government Press, 1944), p. 41.
[16] *Ibid*, p. 3.

are: (*a*) rice, followed by wheat or barley, (*b*) maize, followed by wheat, barley or shaftal, (*c*) rice-fallow-maize, mosh or shaftal.

The Kurram Agency is not now self-sufficient regarding cereal foods, fodder or even vegetables, although it was so as recently as 20 years ago.[17] Because the population has not increased substantially since then, it is believed likely that the Pathan tribes on the Afghan side of the Frontier have become increasingly more dependent on the Agency for their foodstuffs. Although it is illegal to do so, considerable quantities of grain, gur and salt are being smuggled into Afghanistan, and from there large quantities of timber and to a lesser extent foreign-made cloth are finding their way back into the Kurram valley where they are trans-shipped by devious ways to the rest of West Pakistan.

Transport and Settlement. Parachinar, the leading urban centre as well as the administrative headquarters for the Agency, is connected with the important city of Thal in the Kohat District by a first-class metalled road. It is also served by a number of maintained gravel roads across the Sahra to Peiwar and Kharlachi.

Although Parachinar itself is located in the centre of the Sahra about 6 miles north of the river, all of the other important settlements in the Agency are to be found in the riverain Rodgharra circle. This situation is understandable in view of Parachinar's early start as a strategically located military garrison. From this initially artificial existence the city, and especially the commercial part of it, has grown quite rapidly. As a result Thal no longer serves, by right of its rail connections with the 'settled districts', as the exclusive trade centre for both the Agency and for all transit commerce with Afghanistan; Parachinar is gradually assuming its rightful share.

Summary. As mentioned earlier the Kurram Agency, administratively speaking, has a dual personality. Although the Central Government accords its inhabitants almost the same degree of autonomy as the other independent tribal areas, it nevertheless enforces certain regulations, one of which is the payment of land revenue. An indication of this Agency's critical economic position can be gleaned from the fact that the total land revenue collected in 1960 amounted to no more than 75,000 rupees.[18] This amount was below the total yearly salaries paid to government employees in the Tahsil and Revenue Departments. As in the Khyber Agency, a considerable part of the

[17] Of the villages sampled in this valley all had drawn from outside sources 75 per cent. of their food requirements.

[18] Revenue Office, Parachinar, Feb. 1961.

Kurram valley's revenue is derived from employment in the local militia and national service, and from direct government subsidies. In 1942–4 an estimated 600,000 rupees in pay and pensions were paid out each year to 2,200 persons in this form of service.[19] At the Pakistan rupee's current value, the above sum would be at least double this amount.

Because of the Agency's tribal personality the district forest officer was heard to remark, '. . . everything must be done by persuasion, not by force.' He was referring to 70,000 acres of land in the Shabak and Shinguk areas now undergoing reafforestation according to the government's Second Five Year Plan. What he was not able to state, however, was how persuasion would prevent overgrazing and even cutting in this newly reafforested area. Central Government schemes of this sort continue to come out of Rawalpindi and Karachi at an ever-increasing rate. Many are well thought out and conceivably could do the regions concerned a great deal of good. What usually does not accompany them, however, is a realistic plan to make them actually work. In many instances it seems that the technician or government functionary drawing up such a plan has little knowledge of the area for which the plan is designed.

There is no question that along with Hazara the Kurram valley offers some of the Frontier's best development possibilities. What today are the barren stony wastes of the Sahra could soon become, with some imaginative planning and plenty of hard work, at least as productive per acre as the Peshawar Basin. There is no physical reason why, for example, the gravels of this plain below a certain level could not be dug up and then sifted so that the coarser stones might be removed to another area either for building or dam and weir construction. The remaining finer particles could then be mixed with loamy and silty soils either dredged out from the river, dug from the nearby hills or even brought in overland from outside areas.

If the Japanese of the Kofu Basin in Central Honshu can, under identical conditions, remake their stony alluvial fans (almost wholly by hand tools) in order to serve the needs of their intensified agricultural economy, why cannot the Pathans of the Upper Kurram valley do the same?

SAMPLE SURVEYS IN THE KURRAM AGENCY

The following information was collected from four sample villages. Three of the villages were picked at random, except that it was determined beforehand that each should be located in a different assessment circle. The fourth village, Jullandar, was purposely selected for study

[19] Kapur, D. K., *op. cit.*, p. 23.

because it was discovered to be one of the few remaining villages on the Frontier still practising the ancient land tenure system of 'vesh'.[20] As it turns out, all of the villages in this survey are inhabited by Turi tribesmen. This coincidence is purely accidental, though it does illustrate this tribe's strong numerical superiority in the valley.

1. *Nastiḳot* is a wholly fortified village situated near the Kurram River in the Rodgharra circle to the south-west of Parachinar. Within its stout 15-foot high walls are housed 16 families, of whom 11 are owners and 5 are tenants. Built on a mound in order to protect it from the ravages of the spring floods, this self-contained village commands a total of 450 jaribs[21] of farm land. Of this amount a tenant family usually farms about 8–12 jaribs of land on a 50–50 split. In this case the tenant provides the seed and bullocks, while the owners furnish the land and a house within the village walls. The land of this village that is planted in maize is left fallow in the rabi, whereas wheat and rice follow each other continuously.

2. *Safdarsahra* is a village of 70 houses located in the western part of the Sahra not far from Peiwar Kotal. Because it is a baranni village Safdarsahra follows the normal pattern under such conditions: (*a*) the amount of land the village farms is large, i.e. about 1,000 jaribs (each family in this case is utilizing anywhere from 5–15 jaribs) and (*b*) the yields are uncertain and very low, i.e. wheat, 4–5 maunds per jarib and maize 3 maunds per jarib; the latter yield indicates just how poor soil conditions are here, since maize yields almost always exceed wheat. With each household consuming an average of 8 maunds per month it is understandable why 75 per cent. of this village's food requirements must be met from outside sources. The village itself has no water rights and hence must depend entirely upon the good will of the 'Daman' people above them. Since the whole Basin is practically treeless, including even the steeper surrounding slopes (the highest slopes on the Safed Koh still contain a few conifers), the people depend almost entirely on a local bush called 'seri' for their fuel needs. The fact that a single house requires as much as 200 maunds of this fuel over the winter means that villagers must go out collecting it in a never-ending quest. Being threatened each year by disastrous floods from the hill torrents, especially as a result of the coarse debris they carry down from the higher slopes, the villagers of Safdarsahra tried building a bund[22] across the Nullah. This was done in hopes of checking the force of the water and at the same time leading some of it off on to the adjacent fields. So far all their attempts have ended in failure.

3. *Malik Nauroz Ali* is a part of the larger village in the north-western part of the Daman circle called Peiwar. Whereas Peiwar in its entirety consists of 500 houses, Malik Nauroz Ali village has 40 units. In this village all of the people are farming their own land which averages anywhere from 5–12 jaribs per household. Yields here are: (*a*) 10 maunds per jarib for

[20] Periodic redistribution of land of an entire village.
[21] Two jaribs equal one acre.
[22] Small dam.

wheat; (*b*) 12 maunds per jarib for maize and (*c*) 8–10 maunds per jarib for rice. In this village rice accounts for about 60 per cent. of the total kharif crop. Being adjacent to the hills this village has first access rights to the water which is divided according to a villager's allotted turn. If there is any water to spare, which is usual here, it is passed on to villages lower down in the Sahra. Otherwise, the people of the Sahra, according to them, have absolutely no claim to water rights. Wheat sown during rabi only comes up about one inch during the period when snow is on the ground (between December and early March) and therefore suffers no harm. After March it grows rapidly and is still harvested in June and July. Almost the entire village is affected in some degree by malaria. This is a disease which has always figured prominently in this valley, especially since the people are reluctant to give up rice cultivation or even take special precautions while raising it.

4. *Jallandar* is an all-Turi village of 350 houses located in the Daman circle north of the village of Sada. All of the 900–1,000 jaribs are located around the village proper while the remainder are to be found at a place called Shublan (near the main road in the Rodgharra circle) some 4–5 miles away. The latter tract was purchased by members of the village about 100 years ago. Because of the great distances involved in commuting between the village proper and the Shublan land, some families have begun making temporary houses there. Although this Rodgharra land is owned for the most part on a private basis, the 100 jaribs in the vicinity of the village are owned by the people of Jallandar collectively. This form of land ownership dates back to the earliest conceptions of land tenure and is known as 'vesh'. Jallandar is one of the few remaining villages in the Frontier still practising it, even though in a somewhat modified form. All of the village families are farming a part of this land, which in many cases amounts to no more than a quarter of a jarib per family. This means that the land is actually divided on a per capita basis with each person, no matter what their age, getting a share. When a villager dies, his share is distributed among his family.

Twelve years ago the maliks of this village made a settlement whereby all of the village plots were to remain in the hands of the people they were allotted to at that time, for a period of 30 years. They further stipulated that a child born during this period was not entitled to a share of the land until the next settlement was made. Indirectly then, the new child is a shareholder, but only by virtue of his being the member of a family which holds a share. The period of land redistribution in Jallandar has varied from 4–8 years in the past, before the new 30-year period was worked out.

Redistribution of the land at a 'settlement period' is based mainly on the value and location of the land. It works out something like this: if in the past a person has worked a poor piece of land, the village elders (22 in number), sitting in jirga, will try and see to it that in the new settlement he is compensated by getting an exceptionally good piece. The village elders in Jallandar, in contrast to other villages, determine what crops should be sown on which particular pieces of land. No incident has yet arisen in

this village where a person has refused to accept the mandate of the jirga. Crops are harvested by the plot-holders who are allowed to keep what they harvest. The Council of Elders is selected on a hereditary basis, the honour being passed on to the eldest son. Their decisions are almost invariably unanimous, but if they cannot agree, government mediation is sought.

VI

THE BANNU BASIN

THE Bannu Basin in the south-central part of the NWF is the third significant plains tract to be encountered proceeding southward from Peshawar City. Its physical setting is generally much less favourable for development than that in Peshawar. Handicapped by its dependency on rainfall and the flow of the Kurram River—both of which are relatively undependable—the Basin's economy has been severely strained by the need to keep up with a rapidly expanding population. Production of the region's four main crops—maize, bajra, wheat, and grain—has failed to keep pace with the population growth and in at least one instance—bajra, a major kharif crop—there appears to have been an absolute drop in acreage under cultivation.

The chief centre, Bannu City, is tied to the rest of the Frontier by very fine road and rail facilities.

BANNU BASIN

Separated on the north from the Kohat Basin by the young tertiaries of the Kohat hills is the Bannu Basin; the third in the series of important plains tracts of the NWF. It is encircled by barren, inhospitable mountains which rise sharply from the rim of the Basin, within which lies concentrically a torrent-cut piedmont zone, and finally a fertile core closely connected with the 'doab'[1] of the Kurram and Gambila (Tochi) Rivers. Aside from devious routes through the Kohat hills to the north and east and to tribal territory to the west, only the Pezu gap in the Marwat range and the Kurram River gorge near Isa Khel afford easy access from this Basin.

The Kurram River enters the Basin through a narrow gorge about 7 miles north-west of Bannu City. Although it has a catchment area of over 4,000 square miles the river, nevertheless, records a maximum discharge at Bannu City in the end of June of only 200 cubic feet per second; at flood time, however, a discharge of 5,000 cubic feet per second is a common occurrence.[2] The surface of the Kurram plain is generally level, although marked by a few abandoned flood-

[1] Area between two rivers.

[2] Glancy, R. I. R., *Assessment Report of the Bannu Tahsil* (Lahore: The Civil and Military Gazette Press, 1960), p. 1.

water channels. Being a flood plain, soil conditions are fairly uniform over most of the 270 square miles of land that lie between the Gambila and Kurram Rivers. Moderately fine or fine materials, especially very fine sandy loam, silt loam and silty clay loam are always found at the surface of this tract.[3] This part of the Basin is copiously irrigated by canals and therefore is thickly studded with villages.

The western part of the Basin immediately facing the Bhittanni, Waziristan and Kohat hills is represented by a zone of coalesced alluvial fans built of detritus brought down from these adjacent ranges. The material composing these fans is invariably coarse-textured outwash sands and gravels. Moving towards the centre of the Basin the country changes to rolling piedmont plains. Here soil conditions improve somewhat, graduating from coarse sands near the fans to silt loams and very fine sandy loam towards the centre of the Basin.[4] The entire eastern half of the Basin is covered by an extensive undulating plain of alluvial and aeolian sands known as the Wazir Thal. Treeless and practically waterless, this area has the further disadvantage of being cut by numerous torrents from the Marwat range. These have gouged out troughs as much as 60–100 feet below the surface of the plain. They 'occur at such regular intervals that it looks as if a great plough has been at work in the area'.[5]

BANNU DISTRICT

General Setting. Structurally and even with regard to land use Bannu District bears a strong resemblance to the Peshawar-Mardan Districts which lie about 100 miles to the north. Essentially both are large basins[6] girdled by formidable arid ranges which in the western sections are inhabited by independent tribal groups. Soils also display a similar sequence in their zonal depositional arrangement, but at this point the similarity ends. Whereas the Peshawar Basin is drained over a wide area by several large river systems carrying a considerable year-round volume of water, Bannu is almost entirely dependent on the much more localized and none too constant flow of the Kurram River. Because more than two thirds of the district's cultivated area is dependent on rainfall, climate plays a relatively more decisive role in the economic life of Bannu than it does in Peshawar. This condition becomes even more meaningful in view of Bannu's lower annual, and also more unreliable rainfall.

[3] Canadian Government Colombo Plan Survey of the Indus Basin, p. 93.

[4] Canadian Government, *op. cit.*, p. 94.

[5] Glancy, I. R. I., *Assessment Report of the Marwat Tahsil* (Lahore, The Civil and Military Gazette Press, 1905), p. 2.

[6] The actual basin area of Bannu is estimated to be around 1,500 square miles.

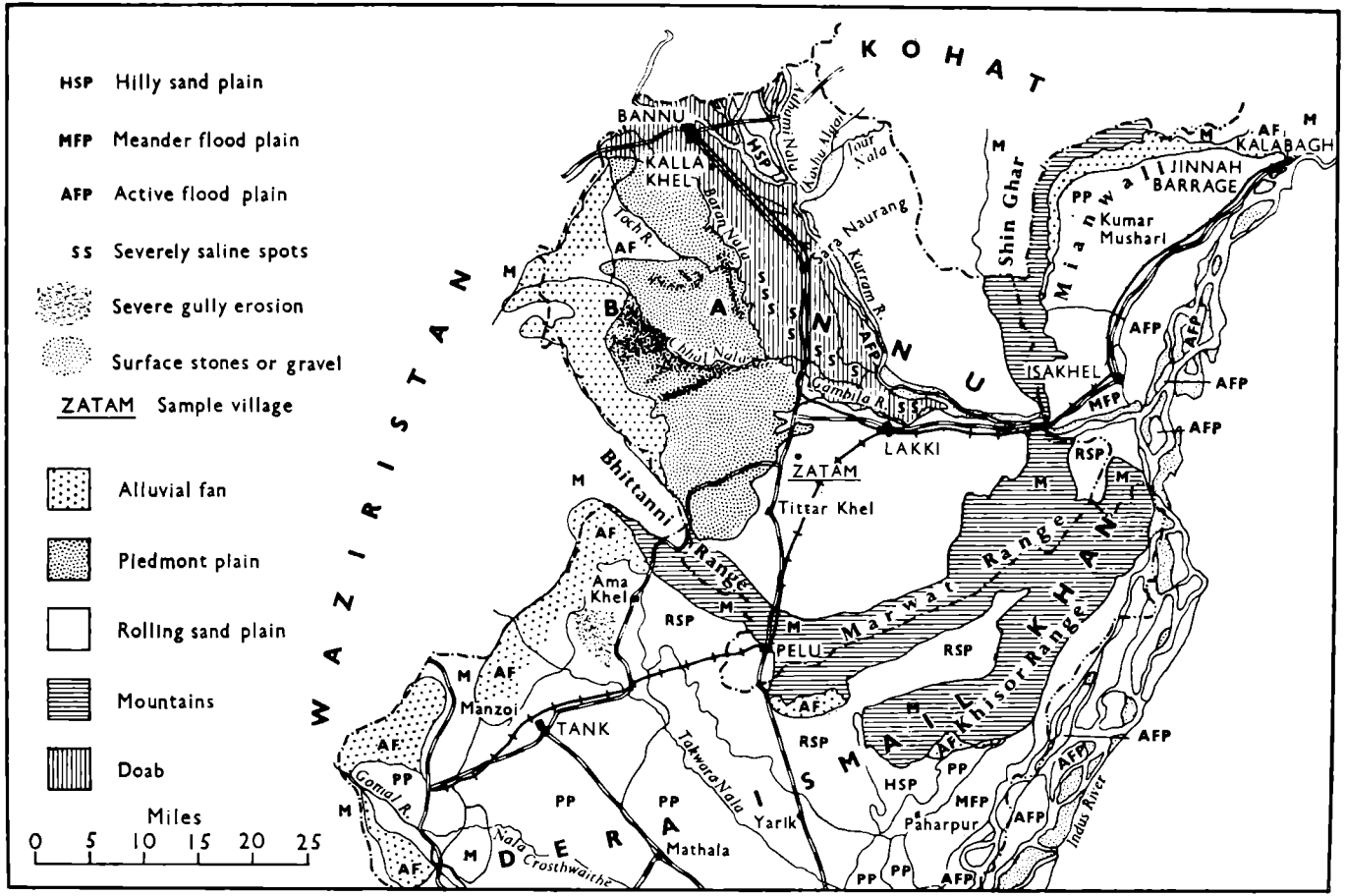

Fig. 18. Bannu District (based on Canadian Govt. Colombo Plan Survey Map)

Tahsils. Since Bannu is a relatively easy area to understand, at least in the sense that it is physically a fairly homogeneous plains tract, no effort was made to analyse systematically (as was done in other districts) the District's 11 assessment circles. Instead, primary consideration was given to the two Tahsils, i.e. Marwat and Bannu, and to the regional demarcations made by the Canadian Colombo Plan Survey Group.

1. Bannu Tahsil is located in the north-western corner of the district. Though it is only one third the size of Marwat Tahsil (its actual area is 471 square miles), its central portion, which lies on either bank of the Kurram, contains practically all of the District's richest agricultural land.

Both irrigated cropping and village settlement are most intense within a radius of about 5 miles from Bannu City. Every available acre in this tract is cultivated and double-cropped, especially since most of the soil material is a rich alluvial clay. On these lands wheat occupies at least 75 per cent. of the rabi crop, the remainder of which is usually sown in fodder crops and vegetables. Maize is grown on two thirds of the fields cropped in summer followed by lesser amounts of rice, sugar cane and fodder crops.[7]

On either side of the Kurram oasis, the country is very different. Beyond the eastern limits of irrigation lies the Wazir Thal, a treeless and almost waterless undulating plain of deep sand deposits; to the west of the Baran stream (which forms the western boundary of the Kurram plain) is a barren ravine-scoured piedmont plain. One of the most prominent physical features in the Wazir Thal (or Lakki plain as it is called in the Canadian study) are the wide, sandy torrents, the Kashu and Adhami, which join together before they debouch on to this rolling sand plain from the Kohat hills. By the use of dry farming techniques in this area involving a careful conservation of moisture received from the summer monsoon, widespread crops of wheat and grain are sown in rabi; the same crops are matured by rainfall from winter depressions. Summer farming on the other hand is most precarious. Cultivation consists almost entirely of the heartier millets and, in relation to the rabi, accounts for only a third of the area's annual harvest.

A considerable part of the cultivation carried on in the piedmont plain to the west of the Kurram doab is made possible by 'rodkohi' or hill torrent irrigation.[8] In this case a series of small dams or bunds have been locally constructed on the Tochi, Khaisora and Shaktu

[7] Canadian Government Colombo Plan Report on Indus Basin, 1954, p. 93.
[8] Cultivation is dependent on flood water.

Rivers and their tributaries. Although not nearly so secure as regular irrigation, 100 acres of rodkohi land nevertheless yields on otherwise barren waste about 17 acres in the kharif and 21 acres in the rabi.[9]

2. Marwat Tahsil is for the most part an open, sandy plain 1,227 square miles in area, shut in on three sides by 2,000–4,000 feet ranges of hills. These are the Marwat range which lies to the south, the Maidani range to the east and the Bhittani range on the west. The drainage, when there is any, in this practically true desert region is carried by the Kurram and Gambila Rivers which unite below Lakki and pass through the gorge of the Darra Tang before draining Isa Khel Tahsil of Mianwali and joining the Indus.

Most of the southern and eastern parts of the Tahsil are made up of undulating downs of alluvial and aeolian sand. Water is invariably found only at great depths from the surface, so that during the 8 or 9 months that the village tanks are usually dry drinking water has often to be carried long distances (1–15 miles) on donkeys. Even hill torrent irrigation is so insufficient and uncertain here that crop failures on the 'rodkohi' lands are frequent. This is because once the hill torrents reach the Marwat plain their beds sink so far below the level of the surrounding country that irrigation is only possible on a very limited scale. With the exception of the Kurram-Gambila doab, crop failures are generally the rule rather than the exception in Marwat Tahsil.

According to the 1905 Assessment Report, 89 per cent. of the Tahsil's cultivated area was sown in an average year; approximately 7 per cent. in the kharif and 82 per cent. in the rabi. Of this amount half of the sown area failed in the kharif and 24 per cent. in the rabi. Wheat occupied 48.4 per cent. of the total area matured in the rabi and grain 44.8 per cent. In most instances bajra, the principal kharif crop, was grown merely for a change of diet. Other figures taken from this report are the Tahsil's total acreage—774,874 and the percentage of this amount that was cultivated—43.6.[10] Considering that little or no land improvements have been made in this Tahsil since that time, with the possible exception of the doab, it would seem that these figures were amazingly relevant even 50 years later.

Commerce and Transport. Lying in the extreme north-western corner of the District, about 7 miles from the place where the Kurram River

[9] Glancy, R. I. R., *Assessment Report of the Bannu Tahsil* (Lahore, The Civil and Military Gazette Press, 1906), p. 29.

[10] Glancy, R. I. R., *Assessment Report of the Marwat Tahsil* (Lahore, The Civil and Military Gazette Press, 1905), p. 24.

breaks out of the Waziristan hills in a narrow gorge, is Bannu City. Situated in the midst of the most fertile tract in the district, Bannu City together with its cantonment area is not only the district's administrative headquarters, but its most important commercial centre as well.[11] As a city it is laid out in a manner quite similar to that of Peshawar City. The city itself is old, with crowded bazaars and narrow lanes, and is surrounded by a high wall. Adjacent to it is the newer and more spacious cantonment area with its broad avenues, smart bungalows, scores of government offices and military barracks.

Because of its commanding position in the district's most important agricultural tract, Bannu City singularly dominates the whole of the district's commerce. It also controls, as a result of its close proximity and excellent road links, all trade connections with the tribal areas immediately to the west. (It is now possible for trucks operating out of Bannu to drive unescorted over the fine metalled road leading to Miram Shah in less than 3 hours' time.) In addition to an excellent road network which includes first-class road connections with Kohat, Tank, D.I.K. and Isa Khel (via Lakki), Bannu City is also served by a metre gauge railway line linking it to Tank and even to the Punjab (via Isa Khel).

Summary. The following information was taken from the 1905 Assessment Reports of Marwat and Bannu Tahsils as well as from the N.W.F.P.'s Statistical Bulletin No. 1. The figures presented are offered here in an effort to compare the rise in the district's population (from 1881–1961) with the increase (or decrease) during a similar period of the acreages given to the 2 main kharif and 2 main rabi crops, i.e. maize, bajra, wheat and grain respectively.

POPULATION (Bannu District)		ACREAGES		
			1905	1952
1881	182,740	Maize	32,465	34,000[12]
1891	204,469	Bajra	14,062	9,000
1901	256,776	Wheat	170,443	172,000[13]
1931	270,301	Grain	84,900	119,000
1941	295,930			
1951	307,393			
1961	432,000			

SAMPLE VILLAGE SURVEYS IN BANNU DISTRICT

Two village surveys were conducted in Bannu District. One involved

[11] Bannu City and cantonment had a population of nearly 35,000 in 1951.
[12] Only 1,000 acres of the maize crop were unirrigated.
[13] 54,000 acres out of the 172,000 acres were irrigated.

a village in the irrigated doab between the Kurram and Gambila Rivers, while the second was selected because of its location in the unirrigated Marwat plain. Aside from the effort to include these two main physical regions in the survey, no other factor entered into the otherwise random selection of these villages.

1. *Kalla Khel* is a village inhabited mostly by Bannuchi Pathans about 3 miles south of Bannu City along the main Bannu–D.I.K.[14] road. This village of 160 houses was originally owned by Hindus. Because of this a number of Muslim refugee families from India have been purposely settled here by the Government after Partition. Today these people own about half of the 3,000 kanals of land cultivated by this village. Most of the rest of the land is held by some 20 Bannuchi families.

Wheat, shaftal (a fodder crop) and sugar cane are the main rabi crops grown here, with maize, rice and vegetables most prominent in the kharif. All of the land under cultivation by this village is irrigated, but in spite of this the village elders still claim that maize yields 8 maunds per acre and wheat only 7. This situation is understandable in so far as kharif is concerned, since irrigation water in the summer is allotted to a village for only 2 kanals of land once every 24 days, but in winter when water is available every day it is hard to understand the reason for such low rabi yields.[15] The fact that an acre of land here costs 3,200 rupees and a tenant only receives one third of the harvest (the owner in this case, however, provides seed and manure and pays the land revenue) also tends to refute these low yield claims. This village can produce about 75 per cent. of its own food needs.

2. *Zatam* is an all Marwati village of 80 houses located to the south of the Gambila River about 28 miles out of Bannu City just off the main Bannu–D.I.K. road. In keeping with the more extensive forms of cultivation characteristic of baranni agriculture this village commands 26,000 kanals of cultivable land. Of this amount 20,000 kanals are owned by absentee landlords from the neighbouring villages of Tajazai, Kaka Khel and Lwang Khel; the remaining 6,000 kanals are held by 10 families within the village itself. Under such circumstances it is understandable that both owner families and tenants are farming an average of 300 kanals of land. Wheat yields, however, reflect the real conditions by barely averaging 3 maunds per acre. Maize, of course, is not possible to grow here and so its place in kharif is taken by the less demanding but still uncertain crops of bajra, jowra or pulses. Providing he owns his pair of bullocks a good tenant can manage to manure no more than 5 out of 40 kanals of land, although usually at least 50 per cent. of the land remains fallow from one year to the next.

After providing the seed and the bullocks tenants in Zatam usually get

[14] The initials D.I.K. stand for the city Dera Ismail Khan.

[15] Since villagers are normally wary of officialdom anyway, it is likely that these yields were underestimated. Until firmly convinced otherwise many villagers fear inquiries of any sort. They are inclined to think of them as all being part of a plot by the Revenue Department to raise land revenue.

half of the harvest. At least 75 per cent. of their foodstuffs, however, must come into this village from outside sources, and therefore, as is normally the practice on the Frontier, many of the village men are forced to seek work of some kind away from their homes.

Zatam is a very poor village. This is clearly reflected in the construction of its houses which are made almost wholly of reeds cut from the banks of the Gambila. The nearest drinking water is 3 miles away and this has to be transported by donkeys since the village does not even own a tank of its own. Zatam also has a considerable amount of trouble with rats, largely because of the sandy region in which it is located. Up till now no government aid has come to this village, though the villagers desperately need such basic things as a well or tank, etc.

VII

THE SOUTHERN HIGHLAND AND HILL ZONE

WAZIRISTAN HILLS

BOUNDED by the Gomal River on the south, the Kurram River on the north, the Afghan districts of Birmal and Khost on the west and the Bannu Basin and the Derajat on the east is a rugged and forbidding highland zone known as the Waziristan hills. Having a total area of approximately 5,000 square miles, this tangled hill mass makes up one of the largest physiographic provinces on the Frontier. These hills face the eastern plains in a scarp with an average height of 1,000 feet, and rise gradually westward until at the Afghan Frontier mountain heights of 10,000 feet are found. The country continues to rise in a westerly direction in Afghanistan as far as the watershed which divides the basin of the Indus from that of the Helmand.

Although this highland zone seems to exhibit no systematic or regularly defined mountain alignment because the ridges and ravines appear to run now in one direction and then another, it is possible by examining its rock structure to discern something of a regular pattern. The outstanding feature that immediately becomes clear under this type of analysis is that the younger series of rocks are found in the eastern or outer ranges, while the older rocks appear in the interior to the west.[1]

Working west from a point where the Tochi River breaks into the Bannu Basin to the area around Miram Shah, the following cross-section of rocks is encountered: from upper Swalik conglomerate in the outer ranges, through lower Swalik, then upper, middle and lower Eocene Nummulitics, with probable Cretaceous beds at the base.[2] Similarly, in a cross-sectional survey conducted by Murray Smith along the Takki Zam valley, the following rock formations were noted to extend westward from the Derapat: (*a*) Older Alluvium, (*b*) Swalik fault, (*c*) Nummulitic fault, (*d*) Lower Cretaceous fault, and (e) Jurassic.[3] It is worth noting that this same sequence was

[1] Smith, F. H., 'On the Geology of the Tochi Valley' (*Records of the Geological Survey of India,* Part 2, XXVIII, May, 1895), p. 107.

[2] *Ibid.*

[3] Stuart, M., 'Records of the Takki Zam Valley and the Kaniguram-Makin Area, Waziristan' (*Records of the Geol. Sur. India,* Vol. LIV, 1923), p. 89.

found to exist in the Fort Monro range south-west of Dera Ghazi Khan some 2,000 miles south of the Bannu plain.

Like all other Swalik formations found in the province, those in this physiographic region consist almost entirely of coarse conglomerates. Similarly in the Waziristan hills these ranges dip very steeply, especially in their western portions where they take on a vertical position. The thickness of these conglomerates is enormous, possibly even matching the 16,000–20,000 feet thickness which Reed estimates is attained by the Swaliks in India.[4] There is considerable evidence in the Waziristan hills of igneous activity. One large area involving massive intrusions exists in the western part of the Tochi valley around Datta Khel.[5] Another, which was only recently discovered and is thought to include commercial quantities of some important minerals, is located in the Makin-Kaniguram area.

In contrast to the general strike of the hills, the main watercourse of this region has an east-west trend. It would seem from the narrow gorges which these streams have carved out for themselves, in order to break through the Tertiaries and reach the Indus, that their origins precede at least the young outer formations. The streams are generally flanked throughout their courses by high hills, which occasionally recede sufficiently to give the spaces enclosed the appearance of small valleys. The width of these ravines can vary anywhere from 1,000 to 100 yards. Their narrowest portions, locally called 'tangis', are where the water has had to pierce its way through a range crossing its course at right angles.[6]

A peculiar feature of river systems here concerns the formation of stretches of alluvial land bordering even the narrower ravines. Known as 'kaches', they represent patches of recent alluvium which have collected on the inside bend of the river. Their presence is invariably protected by the erection of breakwaters and exploited by means of terracing and irrigation channels derived from river cuts. Another interesting form of alluvial deposition, especially in the larger streams like the Tank Zam and the Tochi, concerns wide terraces of old river alluvium. These deposits, which are especially important agriculturally, were probably formed when the river 'backed-up' for a sufficiently long period of time—as a result of being held up at a tangi, for a thick sheet of alluvium to form.

Under normal conditions little water flows in the streams of Waziristan. The beds are almost always thickly strewn with boulders and

[4] Reed, F. R. C., *The Geology of the British Empire* (London, Edward Arnold & Co., 1949), p. 459.

[5] Smith, F. H., *op. city.*, p. 109.

[6] Intelligence Branch, *Military Report on Waziristan* (Simla, Government Central Printing Office, 1905), p. 1.

stones, but summer convectional showers are responsible for their growing into deep raging torrents almost within a matter of minutes. In dry weather, and particularly in the lower hill region, what little water there is in the bed soon disappears into the hot stony ground.

Unlike its ill-defined mountain range alignment, the river system of Waziristan has something of a regular pattern. Located at the northern and southern extremes of this tangled hill mass, and therefore more or less defining its limits, are the Kurram and Gomal Rivers respectively. Between them lie such important secondary streams as the Kaitu, Tochi and Tank Zam. Of these three, only the Tochi, which is also substantially the largest, practically succeeds in making its way independently to the Indus. The Kaitu joins the Kurram even before it leaves Waziristan, while the Tank Zam soon disappears after emerging from the highlands into the sands of the Derajat.

MARWAT RANGE

Striking out from the Waziristan hills in a north-east direction is a well-defined and isolated range of hills which separates the Bannu Basin from the Derajat. Although usually referred to simply as the Marwat range these barren hills actually consist of three narrow but separate ranges, i.e. Bhittanni, Marwat and Khisor. Although these 3,000–4,000 feet hills display the same general north-south alignment as the Waziristan hills and the Sulaiman mountains, they are, nevertheless, devoid of not only all the Tertiary formations but practically all the Cretaceous as well. This fact leads one to believe that they might be a remnant of an older land mass which once extended over a far greater area.

SULAIMAN MOUNTAINS

Although the Sulaimans exhibit the same general north-south trend and even the exact rock sequence as the Waziristan hills, their scale is so much greater and their alignment is so much more regular that they are usually treated as a separate mountain range. Together with their eastern extremity the Shirani hills, they may be described as a huge easterly dipping anticlinal, the axis of which corresponds to the ridge of highest peaks culminating in the Takht-i-Sulaiman (Throne of Solomon).

The outer hills of this mountain system, the Siwaliks, rise abruptly from the plains of the Derajat to a height of approximately 5,000 feet. Immediately back of these are an older Tertiary, the Nummulitics, which are also disposed in a succession of parallel ridges, in this case

the anticlines corresponding with the harder sandstone and limestone rock bands.[7] From the western edge of these ridges the Takht (main) ridge rises abruptly in a succession of bare rocky slopes and precipices, to an elevation of 11,000 feet. This represents the oldest rock formation in the entire range and, though La Touche classes it as being massive Cretaceous limestone,[8] Vredenburg takes exception to this and dates it as middle Jurassic.[9]

Most of the main rivers draining the Sulaimans such as the Gomal and the Sowan have their origins in the long longitudinal valleys to the west of the main Takht range. Other smaller ones like the Toi and the Zao form in the bands of softer rock underlying the massive limestone and conglomerate formations in their way. As expected, the chasms (locally called 'Dhanas') produced under such conditions have reached fantastic proportions. From either side of the water's edge perpendicular walls of rock rise to an elevation of several thousand feet. In the Siwaliks these streams exhibit a more zig-zag course under the inclined beds of conglomerates and sandstones.

WAZIRISTAN

Probably no other area on the Frontier has had the personality of the people stamped on it more than Waziristan. Ever since the close of the fourteenth century when the Darwesh Khel Wazirs moved eastwards out of Birmal (Afghanistan) and pushed the Khattaks from Showal and the Khost border north of the Tochi River,[10] this wild arid hill country has been the homeland for these restive people. Relying on the inaccessibility of their barren highlands, the tribes of Waziristan have for centuries defied the power of the rulers of both India and Afghanistan.

Today the strength of the Waziri tribes is fully realized in Kabul also, since it was largely through their efforts that the Royal House of Afghanistan was able to regain its throne from the bandit Bacha Saqqao. In commenting on their effectiveness against regular British troops a General Staff publication had this to say: 'The Wazirs and Mahsuds operating in their country can be classed among the finest fighters in the world . . . they seldom allow a tactical error to go

[7] La Touche, T. D., 'Geology of the Sherani Hills' (*Records of the Geological Survey of India*, Vol. XXVIII, Aug. 1893), p. 79.

[8] La Touche, T. D., *op. cit.*, p. 79.

[9] Vredenburg, E., 'Pseudo-Sucoids from the Pab-Sandstones at Fort Munro and from the Vindhyan Series' (*Records Geological Survey of India*, Vol. XXXVI, 1908), p. 252.

[10] Govt. of India, *Pathans* (Peshawar, Recruiting Office, Govt. of India Press, 1938), p. 88.

unpunished'.[11] As recently as 1937, 40,000 British troops[12] took part in a series of campaigns which in the last analysis still left the tribes of Waziristan 'masters of their own house'.

Today, the boundaries of Waziristan stretch all the way from the Kurram River (at Thal) southwards to the Gomal and from the Afghan border to the plains of Bannu and the Derajat somewhat in the shape of an irregular parallelogram 160 miles long and 60 miles wide. Besides the Darwesh Khel, which includes both the Wazir and Mahsud tribal groups,[13] the only other two tribes inhabiting the region are the Daurs from the Tochi valley and the Bhittannis who live in the eastern fringes bordering Bannu and D.I.K.

The Wazirs who number about 150,000 persons consist of two main divisions: the Utmanzais and the Ahmadzais. As their more popular name implies, i.e. the Tochi Wazirs, the Utmanzai section inhabits that part of Waziristan roughly north of the watershed between the Tochi and Tank Zam River systems. Their southern counterparts, the Ahmadzai or Wana Wazir, are to be found in the vicinity of the Wana plain, the Shakai area to the north of it and along the Gomal River. The territory of the Mahsud tribes, though split up into numerous ill-defined sections, lies to the east of the Wana Wazirs in an area roughly contiguous with the basin of the Tank Zam River and its tributaries. When for political and administrative purposes Waziristan was divided into northern and southern agencies it is obvious from the way this division was made that both tribal location and physical features were of paramount importance.

North Waziristan. Because it is almost entirely composed of barren stony hills the most significant geographical feature of this 1,600-square-mile Agency is the Tochi River valley. Although a considerable amount of cultivated land exists along the Kurram and its tributary the Kaitu (in the vicinity of Thal), this part of the Agency is orientated much more to the Kurram valley and Kohat District. The Tochi, or Valley of the Daur, as it is sometimes called because of its habitation for many centuries by the obscure Dauri people, stretches about 50 miles from the point where it leaves Afghanistan as the Mastoi River till it enters the Shinkai defile just before it debouches

[11] Army Headquarters, General Staff, *Operations in Waziristan 1919–1920* (Calcutta, Govt. Printing Office, 1921), p. 3.

[12] Williams, C. M., 'South of the Khyber Pass' (*National Geographic Magazine*, April 1946), p. 479.

[13] Although the Mahsuds and Darwesh Khel Wazirs have long been at feud with each other and differ greatly in habits and characteristics, they nevertheless have a common origin. It is the usual practice, though, to refer to them separately, the Darwesh Khel in this case simply being called the Wazir.

on to the Bannu Basin. At its broadest point the valley itself is 5–6 miles wide; its average breadth, however, is one-and-a-half miles. About a third of the total cultivated area in the valley bears two excellent crops each year; the remainder bears only a rabi crop. An estimated 60 per cent. of the winter crop is devoted to wheat while another 20 per cent. is in barley. The most important kharif crop is maize followed by rice and millets.

In view of the importance of this river valley as the most expeditious route via Bannu between Ghazni and India[14] (the distance being only 180 miles), the Tochi was brought under direct British control in 1894. About 80 per cent. of the valley's cultivated area is inhabited by Daurs, 15 per cent. are Utmanzai Wazirs and 5 per cent. are Sayyids. Being semi-nomadic in habit since they migrate each year to the hills in the summer, the Wazirs are poor agriculturalists in contrast to the Daurs who remain in the valley the year round. The Wazir who does migrate usually owns about 60–100 sheep and goats. In addition most of these families will also eke out an existence on some 10–12 acres of baranni land in the hills as a kharif crop while they are grazing their flocks in prescribed areas. These migrations usually involve no more than 40 or 50 miles in distance.

Since the Tochi valley is controlled along lines similar to that in the Kurram revenue is collected. In 1960 this amounted to a little over 31,000 rupees; hardly enough to even pay the salaries of the local officials responsible for its administration. The entire irrigation network is privately owned and maintained; up till now no tube wells exist in the valley although several are planned. The headquarters of the Agency is located at Miram Shah about 40 miles west of Bannu.

South Waziristan. Similar to North Waziristan, the Southern Agency is incredibly bare, stony, rocky and sterile. What trees still exist along with best grazing land are to be found only in the uplands near the Afghanistan border. Because of its large size (1,800 square miles), and relatively low population (223,000)[15] the region gives an empty appearance. This is accentuated because most of the tribesmen congregate in villages situated in the relatively few cultivable areas, or in such areas as lie within easy reach of good grazing grounds.

The most important centres of population concentration are the Wana plain and the Makin-Kaniguram-Razmak area. The Wana plain is a large open valley about 12 miles long and 8 miles broad situated to the west of the Mahsud highlands. Its surface is quite stony

[14] As a military route it was far more satisfactory and direct than the Gomal. Mahmud of Ghazni used it as his favourite way of getting to the plains of Hindustan.

[15] According to this 1961 estimate 44,000 are Wazir and 179,000 are Mahsud.

and traversed by many nullahs which collectively take the name Wana Toi when entering the plain. The plain is practically treeless with the exception of a few willows. Cultivation is extensive along the toi, yielding good but small crops of wheat and barley in rabi, and maize and rice in kharif. All the three Mahsud centres of population are in higher country adjoining the best grazing grounds in the Agency. On the more level valley floors around Makin and Kaniguram, the sloping ground is carefully terraced. The Mahsuds, nevertheless, do not take to farming well and have remained pastoral, migratory and restless. A peculiar feature of Waziristan, but especially in the Mahsud country, are the strongly built defence towers that are to be seen protruding high above each village.

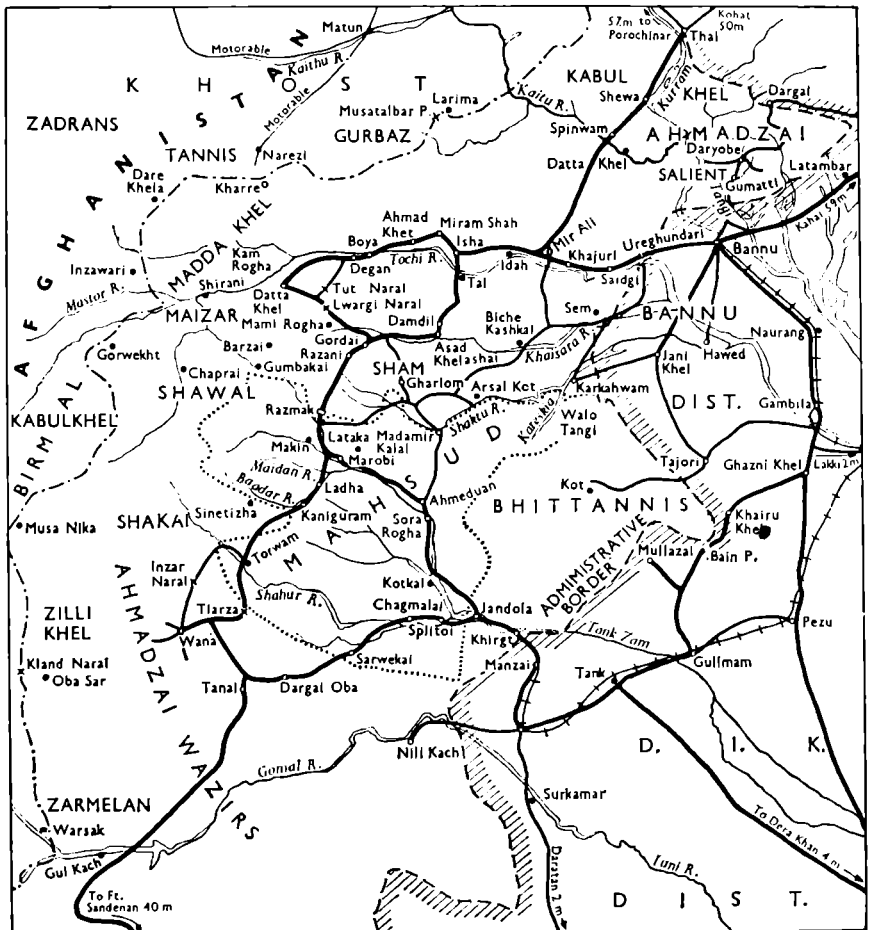

Fig. 19. Waziristan: Road System

Road Construction in Waziristan. In keeping with the policy of 'peaceful penetration' a concerted effort was made by the British after 1919 to construct a network of roads in Waziristan to link the Tochi with the Gomal River valley routes. Besides ensuring valuable means of communication right up to the Afghan border these roads were expected to exert a civilizing influence on the tribes as well. In addition to giving employment to large numbers of tribesmen as Khassadars (road guards) road construction also was expected considerably to enhance the general welfare of the tribes by opening up trading facilities for them.

Waziristan today unquestionably possesses one of the finest road networks in the Frontier. Although this has not particularly stimulated trade in the area, since the region itself is so utterly barren, it does provide through the employment of Khassadars and other forms of militia escort duty a considerable source of income to the tribes. However, just to make their presence felt, and to ensure that the government continues their subsidies and recognizes their independent nature, tribesmen are often involved in dismantling bridges and digging up road posts. In the end the government usually winds up paying the tribesmen to repair the very things they removed or destroyed. Periodic sniping still takes place along the road, but again these are only harassing tactics designed to make their presence felt.

VIII

THE DERA ISMAIL KHAN (DERAJAT) BASIN

THE southernmost region of the NWF, the Dera Ismail Khan (Derajat) Basin, provides one of the most striking examples of the interaction of man and environment on the Frontier. The residents of the Daman, a tract of land occupying most of the D.I.K., have made the area cultivable through the energetic and careful utilization of flood waters originating in the surrounding hills. They have thus painstakingly succeeded in converting what would otherwise be a desert into a tract capable of supporting a significant population. But while the residents of the D.I.K. have adapted their environment to advantage through this form of hill-torrent civilization, they also face the dual problem of a highly undependable water-supply on which their agriculture, and indeed survival, depend, as well as the recurrent problem of devastating floods.

The Derajat Basin is the least important of the four major plains tracts of the NWF.

DERAJAT

In shape the physiographic region known as the Derajat represents a rough quadrilateral narrowing towards the south (its southern extremity also marks the limits of the NWF Region). This 3,373 square mile tract is further defined by the Sulaiman mountains (including the Shirani foothills) which lie to the west, the Indus River on the east and the Marwat range on the north. It is the only area within the NWF that can be classed as being an integral part of the main Indus valley. Proof of this can be seen from its extension southward for another 300–400 miles. This same physiographic region actually comprises, then, all of Dera Ismail Khan and Dera Ghazi Khan districts as well as parts of Upper Sind and Sibi districts.

The Derajat falls into two main natural divisions, the 'kachchi' Indus valley proper, lying below the present bank of the river, and the 'Daman' which takes in the entire tract between the Indus valley and the Sulaiman mountains. A sub-area known as the Pezu plain includes the gently sloping plain of sandy outwash lying along the southern foot of the Bhittanni, Marwat and Khisor ranges.

The Kachchi, which is actually a meandering flood plain, lies within the present bed of the Indus. The long island situated between the main channels as well as the narrow stretches of soil directly under the present banks are accordingly at the full mercy of this mighty river.

The river begins to rise in April and gradually floods the whole area, either directly or else by percolation. Also characteristic of this zone are a complex pattern of shifting silt deposits, abandoned channels, sand bars and slack water deposits.

The Daman tract, which makes up more than 80 per cent. of the region, is roughly 90 miles long and 30 miles wide. Along the foot of the outer Sheranni hills are huge steeply sloping gravel fans, which in the Derajat have coalesced to form a more or less continuous strip. Except in the vicinity of the outwash fans, soil profiles in the Daman contain thick strata of medium or moderately fine materials. Near the nullahs the soil tends to be more thinly stratified and contain a wider range of texture.[1]

Perennial streams in this region are known as 'Zams'. The most important are the Gomal and Tank Zam. Of lesser importance are the Zarkanni, Daraban and Chaudwan. Although classed as perennial, little if any water from these streams actually reaches the Indus except in times of the most severe floods. Actually the bulk of the cultivation in the Daman is based on the flood water from hill torrents. The principal of these are: the Suheli, Takwara, Luni,[2] Sawan, Toa, Naeyri, Tajistan and Ramak. Without laborious attention to the building of dams, the embanking of fields, and the building of channels connected with these hill torrents, the Daman would certainly be a desert in the more complete sense of the word.

Dera Ismail Khan District. 'Floods make or mar our life.' This simple statement made by a Jat[3] peasant from Durra Teli village (*see* sample study) effectively summarizes the kind of conditions under which the majority of the people in this district live. What this farmer meant was the almost total dependence of the people for their moisture supply on the erratically flowing hill torrents emanating in the mountains to the west. Being so reliant on whatever water these torrent floods provide, the people of this district are also obliged under present circumstances to accept the destructiveness unleashed by them as well. Over the past few years this has taken the form of uncontrollable floods[4] which in one case two years ago swept 30–40 miles across the Derajat plains to breach the Paharpur canal in a number of places.

[1] Canadian Government Colombo Plan Study of the Indus Basin, p. 100.

[2] Luni is the name given to the Gormal River after it enters this region.

[3] A non-Pathan people originally of Hindu origin, but who have been converted to Islam in comparatively recent times. Pathans, it should be noted, make up only about 30 per cent. of the entire district and they are located mainly in the northern areas, especially in Tank Tahsil.

[4] It has been estimated that after severe storms in the mountains hill torrents reaching the plains are capable of carrying anywhere from 21,000–150,000 cusecs of water. (Deputy Commissioner's Office, D.I.K., Feb. 1961.)

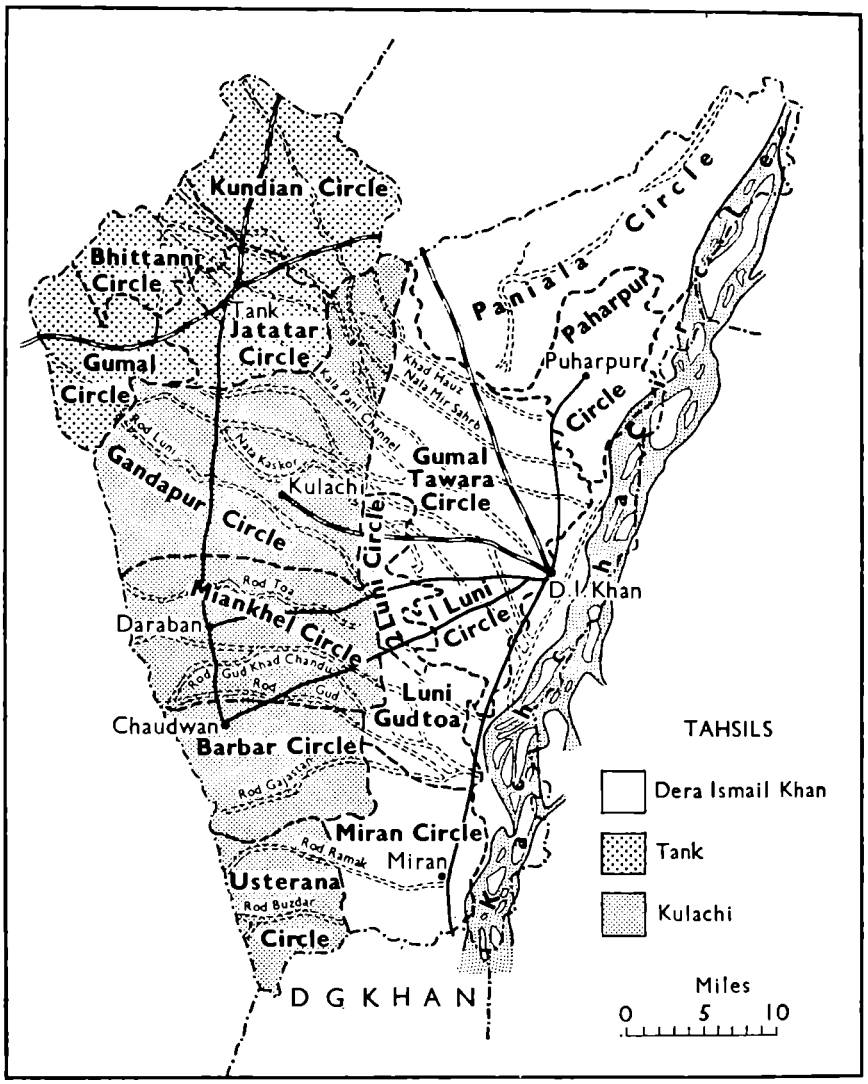

Fig. 20. Dera Ismail Khan District: Assessment Circles and Tahsils; main lines of Drainage; and routes of Communication (Scale R.F. = 1: 506,880)

Hill torrent cultivation, or 'rod-kohi' as it is known locally, accounts for more than 60 per cent. of all land farmed in D.I.K. It is an ingenious system of agriculture designed to function under the most adverse natural conditions. It works in the following way: water draining down in the nullahs is blocked by temporary earthen dams (usually near the place where it debouches on to the plain); provided the dam itself is not swept away at the first rush of flood water, the run-off is diverted by a number of small channels into fields already embanked for the occasion. As the piece of land attached to each series of dams

is irrigated, the dam is pierced in order to let the water flow down to the next dam of the series.

Rainfall hardly averages much more than five inches a year and as one might expect three quarters of this amount is liable to fall in the form of several brief but violent summer convectional showers. Only in the northern areas of the district where the fall is sufficiently high (11 inches) and evenly distributed throughout the year is dry (baranni) cropping possible, but even here rod-kohi is still the most important form of cultivation. More important, however, at least from the standpoint of human habitation are the excessively high spring and summer temperatures which are responsible in large part for the other critical factor, the lack of potable water. So acute are conditions during the hot months that large areas of the daman have to be evacuated, the people migrating with their cattle to areas having a more assured water supply. These invariably lie close to the Indus.

Because these hill torrents play such an important role in the lives of the people of the district it is important to understand the physical conditions under which they originate and their mode of occurrence. The district itself is a long block of country (about 90 miles) bounded sharply on the west by the Waziristan hills and their more imposing southern counterpart, the Sulaiman mountains. To the north, separating D.I.K. from the Bannu Basin, is the Marwat range (this range is also taken to include the Bhittanni and Khisor ranges), while on the east is the broad,[5] sandy, continuously shifting bed of the great Indus.

Aside from certain local variations such as the rolling sand plains which exist along the southern foot of the Marwat range, the district consists of 3 basic physical divisions. Starting at the foot of the western highlands and moving east towards the Indus these are: a series of steeply sloping alluvial fans which have more or less coalesced to form a continuous strip at the base of the Shirani and Waziristan hills, the 'daman', a gently sloping (about 170 ft. in 40 miles) sandy piedmont plain which covers about three quarters of the district's entire land area, and the riverain floodplan tract which lies between the edge of the main stream and the daman.

Both the gravels and coarse sands comprising the fans and the heavy silt loam or silty clay, which makes up the bulk of the daman, are derived from materials brought down by the hill torrents. Of the various hill torrents which have managed to cut their way through the Sulaimans by various gaps and passes, the most important are the: Buzdar, Ramak, Cud, Chandu, Toa and Luni. The alluvial fan belt ranges between 1 and 4 miles in width and is interrupted

[5] The tract occupied by the main stream is about 4 miles in width, while the active flood plain covers an area about 12 to 14 miles wide.

only where there are no mountain torrents reaching the plain.[6] Stretching below these fan deposits all the way to the Indus is the flat, mud-coloured expanse of the daman, the monotony of which is broken only by the numberless beds which traverse its surface in a general easterly direction.

As might be expected most of the successful rod-kohi cultivation is carried on alongside the larger nullahs, especially on those lands nearest to the point where the torrent emerges from the mountains. Fields lower down in the daman and those located between nullahs are only benefited from torrent flow occasionally. Over the greater extent of the daman (estimated at 75 per cent.) land is usually either too far from the main torrent beds or else is located near nullahs which are so deeply incised as to preclude any sort of diversion channels. This is desert waste land, supporting only an occasional acacia and date palm or a saline shrub known as 'lani'.[7]

The stable crops of the daman are bajra and jowar in kharif and wheat in rabi. In the past, because of the greater reliance on the summer floods rather than the occasional winter cyclonic storm, the kharif crop invariably occupied a larger cultivated area than the rabi. In recent years, however, there has been a rapid deterioration of rod-kohi agriculture and hence there is a strong possibility that rabi cultivation has already surpassed kharif in importance.

In striking contrast to the near desert conditions of the daman are the lands adjacent to the river as well as those which lie within the river bed itself. So sharp is the boundary between them that by simply straddling an irrigation ditch it is literally possible to have one foot in the desert and another in this riverain oasis. The lands which are a part of the Indus River's active flood plain are known as the 'kachcha'. This is made of silt and sand deposits which change position and shape from year to year according to the whims of the river. Of course moisture in these islands lying between the braided channels of the river is always close to the surface and abundant. As soon as the wheat crop is in (very little land is available for cultivation during the peak summer floods) almost all the inhabitants move off with their cattle to the higher villages till the floods subside.

Differing only in the fact that it is slightly higher and represents an area that has been deserted by the river for some years past is the riverain tract immediately adjacent to the kachcha. For the most part this is the land commanded by the Paharpur inundation canal

[6] Canadian Govt. Colombo Plan Study of the Indus Basin, p. 103.

[7] Dean, E. T., 'The Daman Beyond the Braided Indus' (*Punjab Geographical Review*, Vol. II, No. 1, Jan. 1947), p. 41.

and the 60 government and 43 private tube wells[8] now in use. The centre of this, the district's most secure and productive area, is located within a 10-mile radius of D.I.K. city. Largely as a result of the relatively recent development of tube well irrigation the land cropped in winter (usually with wheat and fodder crops) is much more extensive than that in summer (largely planted in the millets bajra and jowar). This situation exists in spite of the fact that the 60-mile long Paharpur canal is designed only to meet the needs of the kharif season. A new weir, however, at Chasma, the canal's head, is planned in order to make the canal more permanent and increase the area under its command to 200,000–300,000 acres from its present 47,000.

As in the case of the daman, the riverain areas are also experiencing serious difficulties. Foremost is the problem of bank erosion, which in one area has not only wiped out a village of 300 houses during the 1960 floods, but is also directly imperilling the Paharpur canal itself. At this point now the canal parallels the river less than two furlongs away. In another area river undercutting has been responsible of late for reducing the once sprawling 1,500 acres of irrigated land belonging to the Rakh Mangan military farm to only 400 acres.

Conditions in the daman have been steadily worsening within the past 10 years so that today scores of villages stand deserted now throughout the year, the agricultural population having drifted largely into the Punjab. Muhammad Afzal Khan, Assistant Registrar of Co-operative Societies in D.I.K., estimates that at least 90 per cent. of the wheat producing land has gone out of existence. As more and more families leave the area the difficulties multiply, since the upkeep of this land is closely associated with the clearance of the torrent beds and the strengthening of embankments. Traditional government concern in this matter is reflected in the fact that local villagers were for years actually hired by the Revenue Department to work in improving the condition of the adjoining nullahs. Today, torrents which used to flow in well-defined courses now when loaded run rampant over the countryside. Even the Rod Luni has built a new bed for itself so that it presently runs 10 feet higher than such important nearby settlements as Kulachi, with tragic consequences.

Although the Gul Katch scheme is currently being formulated in order to control the floods of the Zam Gomal, the Deputy Commissioner of the district estimates that this project is at least 8–10 years away from completion. Provided the government deems this the only effective way of dealing with the problem, which past experience

[8] With a three-cusecs capacity, each well commands about 750 acres of land, thereby making it possible for a shareholder to get an hour's water supply for 5 acres each week.

proves it is not, then this sort of planning must ultimately involve the control of all the major torrents in the district in more or less the same manner. In the meantime the disintegration of the daman proceeds rapidly apace.

Sample Village Studies in D.I.K. District

1. *Durra Teli*—this all Jat village is located alongside the Luni nala about 17 miles west of D.I.K. city just off the D.I.K.–Daraban road. This settlement of 21 houses commands a total of about 1,000 acres of land. There are only 4 landowning families living in this village as a considerable portion of the village lands is held by the government, since before Partition this area was heavily populated by Hindus. In spite of the vast area under control of this village the average tenant usually cultivates no more than 12–15 acres; this is about the limit he can manage with one pair of bullocks.

Most of the cultivation carried on here is by the rod-kohi system, though more and more emphasis is now being given to the rabi crop. Because of Durra Teli's location far down the nalla, from where it debouches on to the Daman from the mountains, the people of this village have had only 3 of their crops mature in the past 10 years (and one of these was damaged by hail). The daman soils in this area are structurally so good, though, that provided the fields receive one foot of water during the sowing period and another 2 or 3 limited waterings thereafter the villagers are able to realize a wheat crop averaging 8 maunds per acre.

Conditions have of late become so difficult in Durra Teli that only during the planting and reaping season are a majority of the people to be found in the village, and even then a crop will only be planted if there has been rain or if flood water is available.

2. *Kookara*—is a small Jat village of about 60 houses located near the Indus about 7 miles north of D.I.K. city. Until 10 or 12 years ago this village commanded lands extending 3 miles east of the village which are no longer in existence now as a result of bank erosion. The elders of this village calculate that they are actually losing land at the rate of 300 kanals each year, out of a total of 8,000 kanals still remaining.

Two factors create a unique situation in so far as tenancy is concerned in this village. Firstly, all of the lands of this village are owned by the government as a holdover from the time when they were part of the 'Crown property'; secondly, most of the land farmed by the people of this village is served by privately owned tube wells on a 30 year lease from the government. Because of this situation the people of Kookara are obliged to share their yields not only with the government but with the tube well owners as well. The result is that most families here can meet no more than 20 per cent. of their food requirements by farming. Outside service as labourers on canal clearance and working in harvests in the Punjab (Thal area) is necessary in order to make up the deficit.

Wheat, the most important rabi crop, yields about 8 maunds per acre and maize, the leading kharif crop, yields 35 seers per kanal.

IX

CURRENT SOCIAL AND ECONOMIC PROBLEMS ON THE FRONTIER

INTRODUCTION

Isolated in a region subjected to some of the severest physical conditions of any habitable part of the world, the population of the NWF confronts a range of problems which would severely tax the resources of far more advanced societies. Foremost among these problems is utilization of the land—the only natural resource of the area which has up to the present time been at all significantly exploited. More than 80 per cent. of the population is directly dependent on agriculture—yet few parts of the world could offer a less favourable environment to the agriculturist. Handicapped initially by a shallow, sporadic soil covering, the rural population confronts a dismaying number of other problems—scanty rainfall, severe extremes of temperature, terrain which is often far from level.

Frequently, in its efforts to cope with these problems, a culturally unsophisticated population has aggravated old difficulties or created new ones. Thus, the improvident use of the region's forests has hastened the process of soil erosion, and made even less rainwater available for soil badly in need of it, in addition to destroying one of the Frontier's most important natural resources. The response to the region's extremely limited rainfall has been to construct irrigation systems which at least in some areas are decimating the natural productivity of the soil through waterlogging and salinity.

Any treatment of the Frontier's problems would be deficient without at least identifying some of the important attitudes which prevent the inhabitants from successfully adapting themselves to their environment. Certain attitudes of the Pathans—particularly their traditional emphasis on exploiting the strategic location of the Frontier rather than its resources—are an increasingly serious liability in view of the basic changes which have taken place in the region in recent years. Insofar as these attitudes prevent those on the NWF from making better use of their surroundings, they must be considered as a part of the region's complex of problems.

The problems of agriculture are discussed in a section of this chapter, even though many problems associated with rural life have

been discussed in the treatments of the various regions. Irrigation is discussed in detail and separately due to its special importance.

Urban problems, though they affect a much smaller proportion of the population than agriculture, are accorded treatment in a special section. A special section also deals with trade and industry which thus far is of relatively little importance in the NWF. Government policy toward the independent tribal areas is treated here also.

AGRICULTURAL (RURAL) PROBLEMS

It is impossible to study the agricultural problems of the NWF without drawing the conclusion that rapid population growth and a concomitantly increasing population density on the land are fast reaching a critical stage. The results of this trend are clearly seen in the region's growing dependency on food imports from the outside and an increasing reliance on the part of the Government on subsidies in an effort to prevent living standards from falling even further. There is also reason to believe that the inability of much of the Frontier to support its current population is forcing greater numbers to resort to both temporary and permanent immigration from the region, as is occurring in the Daman region of Dera Ismail Khan.

It should be apparent to any observer that there are deeply rooted contradictions and problems associated with the way agriculture is practised on the Frontier. As though it were a way of saving face, many Pakistani Government officials and intellectuals adopt towards the whole issue an almost ascetic point of view. Their arguments usually involve a condemnation of the western farmer's more business-like attitude towards his land as compared with the traditionally more benign and intimate connection they claim for his Asian counterpart. Allusions to the conservativeness and stubbornness of the peasant farmer are also often produced in the Government's defence of its own inability to solve the agricultural problems of the region.

Although this pessimistic outlook might be considered valid under the conditions prevailing in isolated hill tracts, and where fragmented holdings have been reduced to uneconomic proportions, or where tenant farmers are being exploited, it certainly does not seem to fit the general picture. Progress achieved in the Peshawar Basin gives some indication of what could be accomplished elsewhere. Recent statistics reveal that the amount of land occupied by cash crops, never more than 8 per cent. or 9 per cent. of the basin's total acreage in the past, had risen to 17 per cent. by 1955 and is steadily increasing. A certain percentage of this rise must be attributed to the large tracts recently put under sugar cane by the powerful landlords around Mardan—but the

trend in the small individual holdings is in the same direction. Supporting this view, the government statistician at Tarnab claimed that farmers in the basin are now beginning to sell all they grow, even to the point of purchasing their wheat from outside sources. He went on to say that farmers here will normally put their best land under sugar cane, the next best under fruits, vegetables, potatoes and chillies, while the marginal land, he believed, is being sown with wheat, maize and other cereal crops.

Edmonds feels that, contrary to popular belief, the farmers of this region are quite modern in their outlook.[1] He cites the rapidity with which they have adopted new and improved strains of wheat and maize. Thus, in 1920 Pusa 4 wheat, because of its superior rust-resistant qualities, replaced all other existing varieties within a matter of months. The recent introduction and rapid expansion of Virginia tobacco and American hybrid-corn also tend to refute some of the official views regarding the backwardness of farmers' attitudes. If such advances can be so readily assimilated by the population of the Peshawar Basin, why cannot the government at least try to stimulate similar progress throughout the region?

Among the serious obstacles to the implementation of a forward-looking farm policy are illiteracy and a fantastic belief in 'Taqdir' (the will of God) which is widely held on the Frontier. Probably the most serious difficulty, however, and one which is perhaps the key problem in the initiation of any successful programme to raise agricultural standards here, is simply the lack on the part of the peasant of a will to succeed. This is often reflected in the way small cultivators choose to devote a major part of their limited holdings to extensive crops like wheat, mainly because its cultivation requires the least amount of labour—once the wheat is in, little else is done by the farmer until he harvests it in the Spring. Even in the heavily irrigated areas of the Peshawar Basin, wheat still occupies up to 40 per cent of the total crop acreage.

Another central factor in the Frontier's agricultural problems is the continuing phenomenon of 'landlordism'. Far from disintegrating, this institution actually appears to be becoming more deeply entrenched, particularly in areas such as Swat where large amounts of land are still in the possession of 'Maliks and Khans' (hereditary tribal leaders). Aided by an emerging class of businessmen employed either on a salaried or a contract basis by these hereditary owners as their revenue collectors, the Khans derive all the benefits of their position without actually having to endure the usually trying rural conditions

[1] Edmonds, L. S., *Some Problems of Agriculture in the Vale of Peshawar* (University of London, M.Sc. Thesis, May 1960, p. 173).

of living there. Thus, we find that the Khan, who used to receive his income in kind from a tenant, now has his business agent take over both the task of collecting the taxes and of marketing the produce. This enables the landlord to be paid off in hard cash. Many Khans as a result have little direct contact now with their tenants, leaving practically everything to their 'trusted contractor collector.' This emergence of the rent collector has tended to entrench the institution of 'landlordism' even deeper in the fabric of society on the Frontier.

It is highly possible that there has been a worsening of conditions in the rural areas in recent years. A comparison of Bannu District's population growth with the increase of acreage under cultivation there offers graphic testimony to what is happening on the Frontier. While the population has grown from 182,740 in 1881 to 432,000 in 1961, there have been only negligible increases in acreage devoted to maize and wheat and an absolute decrease in acreage devoted to bajra. Only gram acreage has experienced any significant increase, and even here, the lag when compared with population growth is shocking. A serious gap between the rate of population growth and increase in agricultural productivity is also found in the Kohat and Hazara regions.

The fact that land under cultivation is decreasing in some areas and almost nowhere is significantly increasing is explained by a number of factors. Erosion and waterlogging take their toll in many parts of the NWF. In the Derajat Basin, a complex system of hill-torrent cultivation is rapidly deteriorating and taking out of cultivation many tracts that had been productive for a number of years.

There is also a noticeable decrease in yield of cultivated land in some areas. This is due to wasteful methods of cultivation with little attempt to put back into the soil minerals taken out of it or to provide adequate rest for over-worked acreage. In some regions such as the Kurram Valley and Hazara, fragmentation has grown so severe that plots are too small to permit the use of bullocks and cultivation must be carried out by hand. This extreme form of fragmentation also reduces the land available for cultivation, as boundaries begin to take up more and more space.

It is hard to believe that the government's record in agricultural development and conservation is a creditable one. Many officials charged with responsibility for the NWF are genuinely ignorant of the real conditions that prevail there, as exemplified by those officials who speak about the possibility of exploiting the forest resources of Chitral, when in reality those forests have long since been decimated by immoderate cutting and the lack of conservation practices. When the government does move in their field, more often than not its

efforts are seriously encumbered by what might be termed an 'organization complex.'

An illustration of this unfortunate tendency to think in bureaucratic terms is the recent creation in 1961 of two Agricultural Development Corporations for East and West Pakistan. This decision was made after the ambitious Agriculture Industrial Development Programme —jointly sponsored by the Central Government and the United States overseas aid programme—was allowed to die for lack of interest and support. The new organizations are to be 'semi-autonomous bodies responsible for research advice, and staffing in agricultural development, and particularly in agricultural extension work.'[2] It is difficult, however, to see how the creation of any more new government bodies can in itself solve the problems associated with agricultural development.

Granted the difficulty of the problems faced in the rural areas, some measures of possible government action are obvious. A more widespread and effective agricultural extension service would be of immediate help. So too would be increased production of chemical fertilizers and encouraging the use of available manure, which is frequently being used as fuel rather than as a means of restoring needed elements to the soil. One can hardly over-emphasize the importance of an adequate flood-control programme to halt the ravages of river overflow and hill-torrents which in some areas such as Swat have destroyed more than half of the irrigated land within recent years.

The construction of storage facilities is another step which could with a minimum of outlay prevent the necessity of importing wheat and rice (grains) into areas such as Swat, which has had in the past to import grain only because it lacked adequate facilities to store its initial production. Much benefit would be derived from a forestry programme such as that initiated by the Swati Government through the simple device of dividing its forests into different regions and then insisting that cutting be accomplished in rotation.

All of these measures could be accomplished largely as the result of governmental initiative. Immediate encouragement could be given to the cultivation of needed crops through the effective use of subsidies. Nor should any more time be lost in the rationalization of the sugar industry. The switch to this cash crop has been extremely wasteful in many instances, because the government sugar subsidy does not take into account the capacity of the mills and enables a handsome profit

[2] Friedman, J. J. 'Notes on Pakistan's Basic Democracies' (*Asian Survey*: Institute of International Studies, University of California, December 1961, Volume 1, No. 10, pp. 20–21.)

to be made even on that part of the crop which is burned or made into 'gur'. As part of a much-needed reform, the government ought to allot acreage in such a way as to ensure the production of food staples and realistically match the crushing capacity of the mills with actual sugar production.

The recognition that it is utopian to expect centuries-old attitudes to change overnight should not deter the authorities from making a concerted attempt to inculcate healthier attitudes toward agriculture. There can be no doubt that crop yields—which are in the main static at the present time—would immediately benefit from a changed outlook on the part of farmers. A combined attack on present attitudes of indifference might be launched by the awarding of prizes for superior performance along with an attempt to modernize such incentive-destroying factors as the 'vesh' system. More serious punitive measures allied with an educational programme might pay rich dividends in minimizing the destructiveness wrought by undisciplined acts such as the setting of bunds across irrigation streams to divert excessive amounts of water for the benefit of individual cultivators to the detriment of the irrigation programme as a whole. As an increased appreciation of the common interest in agriculture grows, such acts of selfishness will probably diminish in any event, but this process could be accelerated with wise action on the part of the authorities.

The government should also be concerned with providing alternate forms of employment to attract surplus agricultural population off the land. The potentially rich Hazara Region ought to be carefully studied for development possibilities—something the government has almost completely overlooked at the present time.

There can be no doubt that measures to bring both immediate and long-range improvement are now feasible, far beyond the present pattern of subsidies and grants whose net effect is to encourage continued dependence, rather than movement towards a self-sustaining agricultural economy.

IRRIGATION

Several natural factors combine to make the practice of irrigation an indispensable part of life on the Frontier. Foremost is the low average annual rainfall, i.e. fifteen inches or less, that the greater proportion of the arable land in the province receives. This is usually less than the normal requirements for the principal crops sown. Another aspect of rainfall is its mode of occurrence; in most instances more than 80 per cent. of the total amount received is concentrated in the months of February and March and July and August. During the re-

maining part of the year, even though the fall may be more dispersed, precipitation is, nevertheless, scanty and uncertain. Considering that readings above 100° Fahrenheit frequently occur under shade during the summer (May–November), temperatures also play a decisive role, particularly with regard to the high evapotranspiration rate.

The gross area of the NWF (including the tribal regions) is 22.9 million acres. Of this amount about 8.3 million acres are considered cultivable; of which 1.27 million acres are provided with some means of irrigation. As population continues to increase at its present alarming rate and deforestation proceeds practically undeterred (bringing in its wake steadily worsening erosion), the baranni lands have over the years been rapidly deteriorating in their productive capacity. This, of course, has meant that the irrigated lands have had to produce an even greater share of the province's increasing food requirements. The problems connected with their efficiency as well as the lands they serve, i.e. waterlogging and salinity, are therefore matters of vital concern to all. In the NWF both gravity flow and lift irrigation are practised; the latter method involves lifting water from low levels to higher levels by means of pumps or 'Persian wheels'. For reasons of economy, irrigation was confined chiefly to flow before World War II. Actually, British policy in general was to consider only those irrigation projects which were producing revenue. Any scheme that did not bring the return of 4.5 per cent. on the capital outlay was dropped because it was considered unproductive.

The emergencies brought on by World War II, particularly with regard to food shortages, prompted the government to initiate three lift irrigation schemes in the Peshawar Basin, regardless of the costs involved. These were the: (1) Peshawar Cantonment Lift Irrigation Scheme, (2) Tehkal Lift Irrigation, and (3) Warsak Lift Irrigation. The results of these projects were so encouraging that a large number of the more wealthy landowners began installing their own pumps.

After Partition, the Government of Pakistan embarked on a programme whereby irrigation development was judged on its food producing capacity. This outlook has enabled them to increase the irrigated area in the NWF on the government canals alone from 550,000 to 656,000 acres.[3] This impressive 20 per cent. increase is perhaps the government's most important accomplishment in the field of agriculture. Government irrigation schemes due for completion in the next 1 to 5 years include: Warsak, Kurram Tarki, Tank Zam and Chaudwan. When completed, these projects are expected to bring another 550,000 acres under irrigation.

[3] Statistics from Office of the Director of Irrigation, Peshawar Division.

Problems associated with irrigation. As is the case in most irrigated areas the difficulties involved are essentially twofold: those connected with the canals themselves plus the water rights to them and the problems which develop with the soil after the water has been led on to the fields. By far the more serious of the two is the one affecting the soil, which is popularly known in the Frontier as waterlogging or salinity.

Although it is far worse in areas of Sukkur Guddu and Ghulam Mohammed Barrage, where it has almost put out of production 500,000 acres of land,[4] waterlogging has also begun affecting increasingly larger areas of the Peshawar Basin. In Peshawar District this amounts to about 19,000 acres, while in Mardan the total area affected is 15,000 acres.[5]

To begin with, in arid areas such as are found in the NWF from the Peshawar Basin southward, leaching of the soluble salts originally present in the soil material is usually only local in nature. This occurs, naturally enough, because there is less rainfall available to leach and transport the salts and because the high evaporation and plant transpiration rates in this region tend further to concentrate the salts in the soil and surface waters. In addition to the weathering of primary minerals already present in the soil, a considerable amount of the salt is thought to have been carried in by the irrigation water itself.

In the case of the Peshawar Basin, restricted drainage is considered to be another significant factor affecting salinity, particularly because of its saucer-shaped configuration. The drainage of waters from the higher lands is thought to have an appreciable effect in raising the groundwater level near to the soil surface on lower lands.[6] This condition has probably been aggravated to a large extent by the fact that when canal irrigation was first introduced on a wide scale into the basin in the late nineteenth and early twentieth centuries, engineers then knew very little about such factors as gradient water flow. As a result this led them erroneously to construct canals (especially link canals) across the lines of natural drainage. The fact that these canals often went below the level of the water table meant that, in effect, they were creating a damming effect on the water behind them. As a result the water table in places, which was once 35 feet deep, is now just beneath the surface. A tendency to use water in excess has hastened the rise. Ground water within 5 or 6 feet of the surface containing dissolved salts then begins to move upward into the root zone and

[4] *Dawn*, 2 March, 1962.

[5] Abidi, S. A. A., and Tileston, F. M., *Irrigation Requirement and Consumptive Use of Crops* (Peshawar, Government. of West Pakistan Press, 1960), p. 10.

[6] Bower, C. A., and Fireman, M., *Saline and Alkali Soils* (Washington, D.C., Yearbook of Agriculture, 1957) p. 282.

finally to the soil surface. Near Mardan field after field looks as if it is blanketed in snow, when actually it is large amounts of salt which have accumulated at the surface.

The big question at the moment among the soil and irrigation experts is whether tube wells or better drainage facilities are the ultimate solution to the problem. American experts on the scene feel that the construction of the tube wells will have the dual effect of depressing the water table while at the same time flushing the surface of the soil of its soluble salts. Certain Pakistani officials, notably A. D. Qureshi, believe that the construction of tube wells will only make matters worse, simply by putting more water back on to the fields, without first taking care of the drainage problem.[7] He fervently advocates the improvement of the already existing lines of drainage by such means as lining the walls of the canals, etc. This issue has still not yet been resolved, nor has the problem of salinity been much improved.

The problems encountered as far as the canals themselves are concerned largely result from the irresponsibility of the users. According to the existing rules, the government is responsible for the maintenance of main canals and distributaries, whereas the 'zamindars' (cultivators) are responsible for the upkeep of the water courses. Overgrowth of vegetation, canal seepage and overflow because of silting are all factors considerably reducing the efficiency of the irrigation. The loss due to absorption alone can run as high as 20 per cent. in the case of sandy soil.

Stealing water by putting a bund across a canal at night, damaging and enlarging outlets all in order to obtain a larger water allowance are common practices on the Frontier. Whereas this sort of trouble would easily be rectified in other areas of Pakistan, in the NWF its solution becomes much more difficult. No one wants to start a blood feud; least of all officials of the Irrigation Department who are quite often of non-Pathan origin. The best that can be done in such circumstances is the levying of punitive rates on the guilty party provided he is known. In itself this deterrent is not severe enough to discourage the continuation of such practices.

URBAN PROBLEMS

The extent of the neglect of urban needs on the Frontier is indicated by the almost total absence of any urban development—residential or commercial—since the war. A small amount of industrial building has been the only construction activity in urban centres during

[7] Interview with A. D. Qureshi, Superintending Engineer, NWF, 1 November, 1960.

this period. A considerable measure of responsibility for this rests with the system of tax assessment. Householders must pay a double tax on their real property—to the Central Government and to the municipality—a requirement which is regarded as onerous and unjust. The heart of the tax problem in the cities, however, rests with the fact that rates are computed on the basis of the return the property would bring were it to be rented out. Thus, owners of more valuable property are penalized. This has reinforced the traditional emphasis on the Frontier on acquiring land rather than real property in the cities.

The results of this sort of tax system have been unfortunate in several other ways. Holders of property are extremely loath to improve it in any way, lest the assessors raise their rates; indeed, numbers of store- and house-owners go to great lengths to make their property appear even less valuable than it is, in the hope of deceiving the tax authorities. Those who can afford to do so have also turned to building substantial homes in small villages outside the municipal limits as a means of escaping taxes inasmuch as there are no immovable property taxes in the rural areas.

The present tax system in the cities does more than just discourage urban building. By encouraging indirectly the investment of available capital into land, absentee landlordism is promoted and industrial building becomes even less attractive to what little capital there is on the Frontier. The municipalities also lose potential revenue which would be derived from real property within their limits if the system operated somewhat less to the disadvantage of urban property-owners, not to mention the vast improvement in the appearance of urban centres which would result.

Suburban development is also impeded by a general feeling of insecurity which attaches to living outside the city limits.

Another attitude which is anachronistic under present conditions but nonetheless widespread is the traditional fear of confiscation of property through taxation or arbitrary action on the part of the government. Thus, the holders of capital are still much more likely to invest their funds in non-productive goods such as jewellery, gold, automobiles, etc., rather than in industrial properties.

The result of all these factors is that urban development lags far behind urban needs, with little prospect for relief in the near future.

GOVERNMENT POLICY TOWARDS THE INDEPENDENT TRIBAL GROUPS

The present policy of the Pakistan Government towards independent tribal groups like the Afridis seems basically to emulate the

scheme of 'peaceful penetration' evolved by the British towards the latter period of their administration. Whatever control they can exert on the independent tribes is by dealing through, rather than over, the heads of their local tribal Maliks. Although this policy involves official recognition by the Central Government of tribal sovereignty, it makes possible subtle but effective efforts to reduce the scope of the tribes' independence.

Apart from some infrequent patrolling missions (locally called 'gushts'), which are usually confined to the main roads, and the occupation of certain key forts within the tribal areas by Frontier militia and scouts, little overt pressure has been brought to bear on the tribes by the Government of Pakistan. After 1948 when all of the Pakistani Army units stationed in tribal territory were pulled out in order to meet the Kashmir emergency, no effort was made to re-establish the troops in their former positions. Instead, their place was taken, on a very much reduced scale, by locally raised Militia and Scout units.

From Pakistan's inception in 1948 until 1955, nothing in the way of an active policy towards the tribes was pursued; rather it was a period of placation—keeping the tribes happy simply by taking no action whatsoever and by maintaining the already established doles and subsidies to the Maliks in authority. Since 1955, however, when the 'one unit'[8] rule was put into effect, the conduct of Frontier affairs has taken on a new aspect. By implementing a programme which might be regarded as an improved version of Britain's earlier policy of 'peaceful penetration', the Pakistan Government has been making slow but steady progress towards integrating the independent tribal zone into West Pakistan.

This integration policy begins essentially with various government-sponsored aid schemes mainly dealing with education, which has been singled out as one of the most effective means of achieving integration. Considerable effort is being made by the Pakistani Government to get the tribes to agree to open more schools, staffed, of course, by Pakistani teachers. Recently a modern new hostel has been opened on the campus of Peshawar University for the exclusive use of those tribal youths wishing to take advantage of it. Some zealous officials have even gone so far as to dub the entire institution the 'Frontier University.' According to figures released by the Ministry of States and Frontier Regions, 3,800,000 rupees are being authorized for the current year for tribal education in contrast to the first year after partition when only 104,000 rupees were spent for this purpose.

In conjunction with their economic aid programmes, it seems that

[8] By a piece of legislation enacted in October 1955 in Karachi, the NWF ceased to function, at least officially, as a separate administrative division.

the Pakistan Government is relying on the material benefits offered by the 'better life' as another means of breaking down tribal resistance towards integration. Since the tribesmen now tend to take for granted the use of such items as sugar, tea, cloth and even transistor radios, it is becoming absolutely essential for them to maintain their close links with the settled areas and to agree to accept at least minimum aid from Pakistan. In commenting on the 'domestication' of the Adam Khel Afridis of Kohat Pass, one army officer suggested that their successful economic ventures were making them 'soft.' He specifically cited the current sale of firewood in the Darra Bazaar, saying that no self-respecting Afridi in the past would ever think of buying wood, but would go out and somehow secure his own. Probably the best of the civilizing effects of the 'better life' anywhere on the Frontier is to be found in Mahsud tribesmen. Where in the past they were feared for their treachery in combat, they are now, having taken over a number of businesses vacated by Hindus who fled after Partition, known for their treachery in commerce. They have come to dominate the entire economy of Tank.

The flexibility and astuteness with which Pakistani officials are carrying out their programme can be measured by the new relationships they have established with the tribal 'Jirgas' (tribal councils). Realizing that tribesmen often come to Jirgas fully armed, and sensitive about 'losing face', official policy has been to try to discourage their formation. Instead of one contending party being left angry and dissatisfied as is usual when disputes are handled by Jirgas, the Political Agent now uses his 'good offices' in an advisory capacity to settle tribal conflicts. This is usually done in a quiet manner free of all the pressures and excitement that invariably characterize the tribal council meeting.

The recurrent dispute with Afghanistan over the issue of 'Pakhtunistan' has forced the Pakistanis to deal with the tribes with even greater caution than they would otherwise, lest their allegiance should shift to the Afghan cause, thereby upsetting the delicately maintained balance of power in the tribal zone. It seems doubtful whether the Pakistanis, in their efforts to keep the Frontier quiet at this time, are actively trying to subvert to their cause the Pathan tribes under Afghan influence. The tribes, of course, fully realize the advantages they enjoy in this international struggle, just as they have always understood their favourable position under similar circumstances in the past. As might be expected, they have expertly exploited this position in order to preserve their independence as a people and the semi-autonomous character of their homeland. The fact that the more powerful tribal groups are still turning down attractive government

rehabilitation schemes indicates just how eager they are not to relinquish their 'neutralist' position.

One might say that the true measure of the Pakistani Government's success in dealing with the independent tribes on the Frontier is to be found in the relatively peaceful conditions that have prevailed there for the past 17 years.

INDUSTRY AND TRADE IN THE NWF

Since this is obviously a lengthy subject to deal with, only the most important industries were selected for individual analysis. The others are simply listed along with their present estimated output or operating capacity in Table VI in the Appendix. In the case of the unadministered areas the various industrial schemes in progress or under consideration are described in Table VI in the Appendix. In addition to a straight industrial analysis there is a section which discusses trade with Afghanistan, highlighting the role of the Province as a staging area for goods involved in this rather unique form of international commerce. Aside from the salt industry, no other minerals in the NWF reach any degree of commercial or industrial importance at the present time and are therefore ignored. The importance of road transport to the province is related in a section dealing with the trucking industry; an interview with the manager of a large transport firm has been included in the Appendix. Statistics on bus services and their frequency are also given in the appendix.

Trade via the NWF with Afghanistan. Since October 1960 the borders between Afghanistan and Pakistan, except sporadically,[9] have been closed to all forms of economic intercourse. Whether this ridiculous situation is allowed to continue or not is naturally difficult to say, but because this is such an artificial situation so far as the general economic needs of both countries are concerned, the following account of normal trade activities is rendered under the assumption that it will soon again be in operation.

According to figures compiled by the Central Statistical Office (Government of Pakistan) the total value of Afghanistan's foreign trade through Pakistan in the calendar year 1959 amounted to roughly 47 million dollars.[10] Although a fine graded road now exists through the efforts of the Morrison-Knudsen Company[11] from Chaman (near

[9] Mostly to enable Afghanistan to receive U.S. aid material.

[10] The value during the four preceding years was approximately: 1958, 40 million dollars; 1957, 43 million; 1956, 25 million; 1955, 21 million.

[11] An American firm also responsible for a large earth-filled dam near Kandahar.

Quetta) all the way to Kandahar (a distance of about 75 miles), it is estimated that more than 80 per cent. of Afghanistan's foreign trade still moves through Peshawar and the Khyber Pass.

Approximately 175 railway wagons of dried fruits and nuts are exported by Afghanistan via Peshawar to India between the months of November and February. About 20 truckloads of fresh fruit are sent to India between September and December. Each truck usually carries about 400 crates of fresh fruits; in this instance each crate weighs about 26 pounds.

Besides the dried and fresh fruits and nuts, Afghanistan exports carpets, hides and skins by way of Peshawar and Karachi to many other countries of the world. These products plus 'heeng' and other local drugs (mainly destined for India) are sent through Pakistan at all months of the year, except that most of the truck transport is tied up with the export of foodstuffs between the months of September and February.

Most imports to Afghanistan reach Peshawar by rail, where they are picked up by Afghan trucks. As one might expect there is a great variety of goods moving through Peshawar en route for Kabul and other centres in Afghanistan. No customs duty, however, is levied by the Pakistan Government on any of these goods.

Acting more or less as a 'clearing house' in all of these trade activities with Afghanistan is Peshawar City. This is certainly evident from the presence of innumerable wayside money-changers in the larger bazaars who deal almost entirely in converting Afghan and Pakistani currencies.

Operations of the Pakistan Tobacco Company.[12] From the head offices of the company located at the re-drying plant in Akora Khattak contracts[13] are given out to those farmers in the area (mainly Swabi Tahsil) who are in possession of a reasonable amount of good tobacco land and adequate water supply and who are able to put up enough money for a bond in order to guarantee fully the contract they have signed. Although most people under contract with the company have at least one barn there are many who own only the barn and no land themselves. Such persons generally buy the green leaves off the small cultivators, cure the tobacco in their barn and then send it on to the company for re-drying; the arrangement between the grower and barn owner being a purely private affair. Only the person possessing the contract, however, is paid by the company.

[12] By far the most important single company of its kind in the NWF. It is affiliated to the giant British-American Tobacco Corporation.

[13] This includes insurance of better grades of seed.

As a result of the construction of this company's re-drying plant not far from Nowshera the amount of acreage sown to Virginia tobacco has been enormously increased. This plant now handles more than 90 per cent. of the Virginia tobacco grown in the NWF. Tobacco is dried and graded here under the most modern conditions and is transported not only to the large urban centres of Pakistan, but to overseas destinations as well.

Flue-curing, however, is still handled largely by the individual farmer either in his own barn or else under some sort of agreement or contract with another. It is worth noting that whereas flue-cured

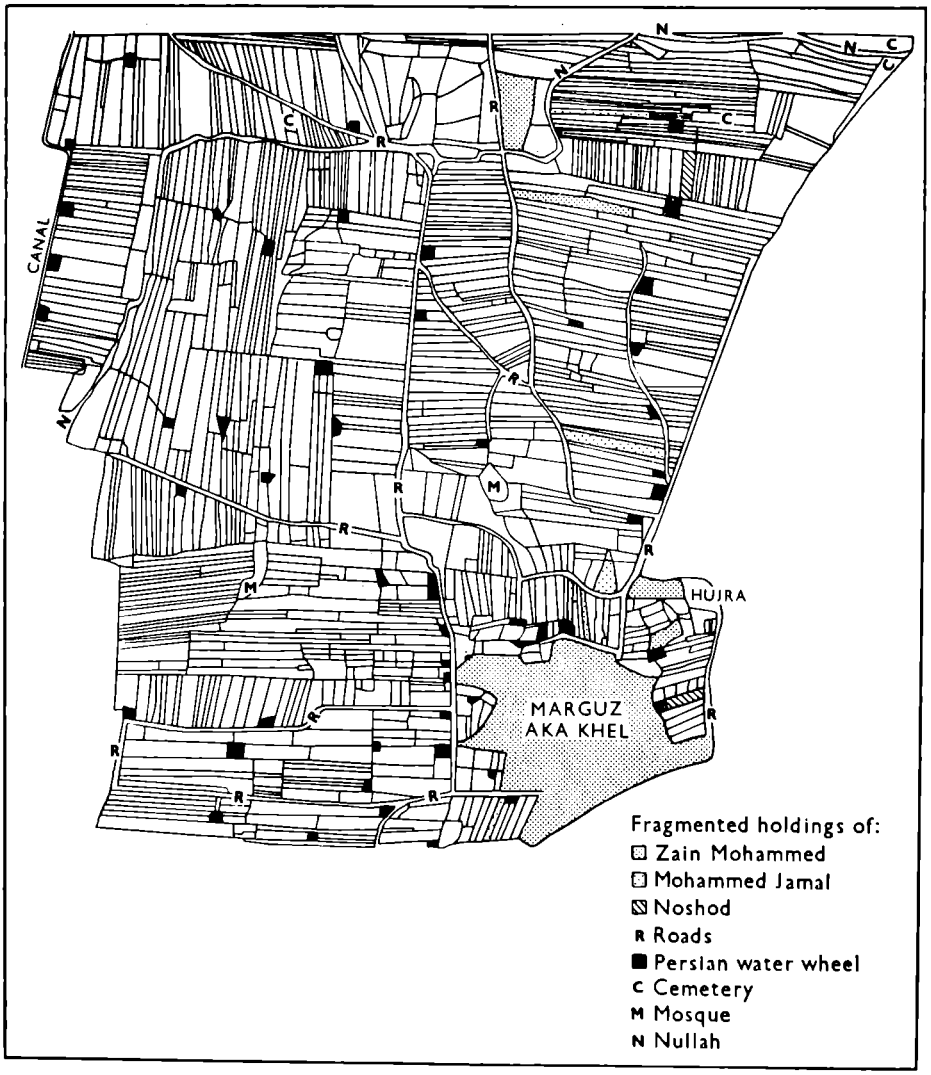

Fig. 21. Tobacco Cultivation and the problem of Land Fragmentation (Scale 1": 220')

tobacco ranges in price (there are different grades) from 2 annas to 32 annas per pound, air-cured tobacco only brings between 2 annas to 12 annas per pound.

The following statistics relate to the Virginia leaf purchases (in million pounds) made by the Pakistan Tobacco Company at their Akora Khattak re-drying plant.

	Flue-Cured Virginia	*Air-Cured Virginia*	*Total*
1951	4·43	2.14	6.57
1952	3·35	2.06	5.41
1953	3·44	2.85	6.29
1954	6.15	4.70	10.85
1955	9.72	2.93	12.65
1956	6.33	2.63	8.96
1957	6.73	4.33	11.06
1958	10.36	7.15	17.51
1959	12.79	8.54	21.33

The Sugar Industry. It would seem that of all the industries in the Province sugar-making has the opportunity of either achieving the greatest success or else of becoming ultimately a disastrous failure. This is because the very nature of the industry requires the utmost in planning and organization, so much so that it either runs efficiently and hence profitably, or else it does not. At the present time the sugar industry is not running well.

According to the resident manager of the Premier Sugar Mill, the Province's largest and newest, about 60 per cent. of the cane grown[14] is being absorbed by the three main sugar mills, i.e. Premier (Mardan), Charsadda and Frontier (Takht Bhai). In answer to a remark, which was attributed to an influential government agriculture official, to the effect that the mills were only accepting a third of the entire sugar cane crop, the manager claimed that the larger farmers and landowners were falsifying their crop estimates in an effort to gain a larger mill quota for the following year. He claimed that although the official estimate of land under sugar is 180,000 acres, the real figure is somewhere around 140,000 acres.

To add to the complexities of the sugar industry there is the question of 'gur'. Because government rationing of sugar is still in effect, a fluctuation in the price of gur will cause farmers to hold back from selling their cane to the mills in order to try and make a profit on the homemade variety. This has resulted on numerous occasions in the

[14] Only Peshawar and Mardan districts are concerned.

mills having to close down owing to insufficient amounts of cane to crush.

Apart from the various difficulties arising out of the inability of the mills and the growers to co-ordinate their activities there are the serious problems connected with the crop itself. No better indication of this is necessary than a glance at the statistics relating to yield of cane (in tons) per acre and the yield of sugar (in tons) per acre of the world's 10 leading sugar cane producers. Heading the list in each case is Hawaii, with a yield of 62 tons of cane per acre which resulted in the production of 6.44 tons of sugar. Pakistan, in contrast, stands at the bottom of the list in each case, with a cane yield of only 12.05 tons and a sugar yield of 0.96 per acre.

This situation is self-evident when one considers that farmers, instead of limiting their plans to 3 successive seasons as the law requires, are keeping them in the ground on an average for 6 years and in some cases even up to 8. Not only does this practice render the plants more susceptible to attacks by disease and damage by frost, but it is also the single most important factor affecting the cane's sugar content.

In spite of the fact that all of the sugar cane is grown under irrigation, rainfall is, nevertheless, a critical factor. This can be seen from the fact that cane grown only under irrigation yields 350 maunds. In order for there to be a really good crop between 5 and 6 inches of rain are needed in July and August. Because of a drought in the summer of 1960, the Premier Sugar Mill produced only 450,000 maunds of sugar, 60 per cent less than the year before.[15]

Under these circumstances it is dismaying but yet understandable to find that it actually costs from 10–15 shillings a maund more to produce sugar in Peshawar than it does to land foreign sugar in Karachi. Thus, in spite of its enormous sugar-cane growing capacity Pakistan is currently importing 60,000–70,000 tons of white sugar each year.[16]

The Salt Mines of Kohat: an ancient industry in operation today. Since recorded history began in the area the three salt mines of central Kohat are known to have been in operation. Located within a 10 mile radius near the large village of Teri, these open mines are the most important of their kind in the entire province. The largest of the three, Bahadur Khel, regularly exports (except for Sunday) 20 truckloads of rock salt a day to Kohat, Thal, Bannu, D.I.K., Peshawar and the Punjab. One truckload carries about 12,000 pounds of almost pure salt which on the open market realizes 530 rupees. About 10 such

[15] *Dawn*, 2 March, 1961.

[16] *Pakistan News Letter*, Pakistan Embassy, London. Sept. 1961.

truckloads a day operate from Jatta, the second most important mine, while one load comes out of Karak, the least productive of the three.

The Functioning of the Bahadur Khel Mine. Originally this mine was always under the ownership of the Nawab of Teri, the once titular head of all the Khattak tribes. During the British era he accepted a 'jagir' (grant) of 60,000 rupees for the right to exploit the mines. This grant was cut off by the Pakistani government only within the last few years.

A mine still continues to function today as it has for hundreds of years in the past, except that the Central Government maintains overall control through a number of excise officials located at each mine. As for Bahadur Khel the only people allowed to work in the mine are those from the 5 surrounding villages of: Bahadur Khel, Darshi Khel, Charapara, Jalafanda and Dhol Banda. In these villages there are 6, 3, 4, 2 and 3 maliks respectively, each of whom is assigned a certain plot (called 'Sulaymani') to work in the mine area. Each of these Maliks is allotted from 1,300 to 2,000 maunds (depending on their seniority and the numbers they command) of rock salt for extraction twice a month.

The maliks have in turn allotted the families living under them a certain number of maunds to be mined during their specified turn. A villager can earn as much as 10 to 25 rupees for a day's work; the only difficulty is that his turn comes up probably no more than the limit allowed him by his malik. Usually this amounts to about 100 maunds in a day twice each month. The maliks, on the other hand, take a larger percentage of the total amount allotted to them by the government, which they often give out under contract to the more needy persons of their village.

At the present time a total of about 150 people work the mine. With the aid of explosives extraction is made entirely by hand. The actual mining operation is carried on within a 3-mile radius, although the salt hills themselves extend much farther eastward.

After the villager actually mines his quota, the blocks of salt are carried by trains of small donkeys to the shed of the customs official about half a mile away. Here, after weighing and storing, the villager receives credit for the amount delivered. Since the customs shed is only a few hundred yards from the main Kohat-Bannu metalled road, trucks are loaded in the immediate area. At this point the salt sells for about 350 rupees per 100 maunds.

The Trucking Industry in the NWF. A number of factors are responsible for the trucking industry assuming such a great importance

in the overall economy of the NWF. Foremost of these is the fact that the province itself is knit by one of the finest road networks in the entire sub-continent. Born initially out of strategic and political interests, the system has not only been excellently maintained by the Pakistan Government, but very often it is being improved and in some cases even expanded.

As one might expect, trucks[17] are the main means of transport in the tribal areas themselves as well as being the principal links with the settled districts. They also provide one of the principal sources of income for the tribesmen, since next to military service it is one of the most popular forms of activity a Pathan cares to seek his livelihood in. This is evident from the care and attention they lavish on their equipment which is equivalent, insofar as maintenance and upkeep are concerned, to the highest western standards.

The fact that Peshawar also serves as the main trans-shipment point for all fresh fruits bound for India and the main urban centres of Pakistan from Afghanistan adds significantly to the importance of the trucking industry in the province.

[17] In many instances on the Frontier the term truck and bus could conceivably be used interchangeably, since as much passenger freight as goods is usually hauled in them.

STRUCTURE OF LAND USE IN THE NORTH-WEST FRONTIER PROVINCE

(expressed in Percentages of the total [in acres], Average 1945–51)

	NWFP*	HAZARA	MARDAN	PESHAWAR	KOHAT	BANNU	D.I.K.
1. Total Area	8,526.1	21	8	12	20	13	26
2. Net Area cultivated	2,279	17.9	18.7	19.8	12.4	16.7	16.5
3. Forests	602.5	77.8	—	2.9	4.8	—	14.1
4. Not available for cultivation	2,657.3	5.7	7.2	9.9	44.7	11.9	21.6
5. Wheat							
a. irrigated	323	5.3	26.5	29	6.25	16.6	16
b. unirrigated	573	19.6	16.9	6	17.6	20.5	16.9
6. Maize							
a. irrigated	258	8.5	39	34	4.6	12.8	1
b. unirrigated	217	91	1	1.5	5.5	0.5	—
7. Barley							
a. irrigated	57	1	44	28	1	21	5
b. unirrigated	80	15	43	13.8	11	13.8	3.7

	NWFP*	HAZARA	MARDAN	PESHAWAR	KOHAT	BANNU	D.I.K.
8. Rice							
a. irrigated	24	54	—	16.6	4.2	8.4	12.6
b. unirrigated	—	—	—	—	—	—	—
9. Bajra							
a. irrigated	9	—	—	—	22	—	77
b. unirrigated	123	2.4	—	—	47	6.5	44
10. Jowar							
a. irrigated	13	7.7	39	7	—	7	39
b. unirrigated	72	9.8	8.3	1.3	5	5.5	69
11. Gram							
a. irrigated	6	2	2	2	1	6	83
b. unirrigated	206	1.9	2	1.4	10.6	58.5	25
12. Sugar cane							
a. irrigated	131	1	39	56	—	3.9	—
b. unirrigated	—	—	—	—	—	—	—
13. Tobacco							
a. irrigated	13	—	93	7	—	—	—
b. unirrigated	—	—	—		—	—	—

* Expressed in Thousand Acres.

APPENDIX 2

AGRICULTURAL STATISTICS FOR CHITRAL STATE*

I. Estimated Total Cultivated Area is as follows:—

1.	Chitral District	33,175	Chakawarum†
2.	Mastuj District	50,337	,,
	Total	83,512	,,
	or	41,756	Acres

II. Total Estimated Annual Production of the Main Crops of Chitral State for the year 1955–56 is as follows:—

1.	Wheat	89,850	Maunds‡
2.	Barley	221,330	,,
3.	Jowar	70,160	,,
4.	Sholi (Rice)	24,310	,,
5.	Pulses	974	,,
6.	Onion and Potatoes	2,610	,,
	Total	409,234	,, =50 tons.

III. The Estimated Average Yield Per Acre of some Main Crops is as follows:—

1.	Wheat	6	Maunds/acre
2.	Barley	12	,, ,,
3.	Jowar	8	,, ,,
4.	Rice	12	,, ,,
5.	Onions and Potatoes	66	

* Based on Statistics Compiled by the *Board of Economic Inquiry* (Peshawar University), 1956.

† 2 Chakawarums equal 1 acre.

‡ 1 Maund is equivalent to approximately 25 pounds.

APPENDIX 3

STATISTICS: SWAT STATE

1955 Exports from Swat State (from Landakai Customs Barrier)

1. Maize	85,697	Maunds	5. Hides and Skins	2,399	Maunds
2. Paddy	35,402	,,	6. Walnuts	1,680	,,
3. Barley	23,032	,,	7. Rice	968	,,
4. Pulses	4,880	,,	8. Wheat	630	,,

1955 Imports into Swat State (through Landakai Customs Post)

1. Petrol	105,505	Gallons	5. Rice	6,004	Maunds
2. Cement	19,897	Bags	6. Wheat	2,258	,,
3. Sugar	12,464	Maunds	7. Gram	2,051	,,
4. Kerosene oil	9,915	Tins	8. Steel	2,010	,,
	9. Cotton		1,960 Maunds		

Annual Crop Production and Yield per acre of Swat State—1956*

Crop	*Area in Acres*	*Total Production in Tons*	*Per Acre Yield*
Wheat	23,000	9,973	12.1 Maunds
Barley	4,600	2,000	12.2 ,,
†Jowar (Maize)	83,730	60,980	20.3 ,,
Rice	14,240	18,000	34.6 ,,

Annual Crop Production of Swat State 1958–59*

Wheat	16,667 Tons
Barley	8,333 ,,
Maize	56,250 ,,
Paddy	18,755 ,,

* Source—Chief Secretary to the Ruler of Swat published by University of Peshawar, Board of Economic Inquiry, 1956.

† Attention should be given to the fact that in most instances Maize and Jowar are treated as two different crops; in this instance it is assumed that the authors of this work in fact mean maize.

STATISTICS: MALAKAND PROTECTED AREA

1. General.

The area of the Malakand Protected Area is 265 square miles. Its population according to the 1951 Census was 89,699 giving it a density of 338 people per square mile.

An annual sum of 30,200 rupees is paid out by the Central Government in allowances to the tribes in this area. This money is directed to certain selected people, i.e. tribal leaders, and can hardly be an important factor in the overall economy of the region. The pay and allowances received by the

758 Tribal Levies, amounting to an annual total of more than 500,000, does, however, have a significant effect.*

Agriculture.†

2. Crops (Estimates in acres)

Total Cultivated Area	85,000
Irrigated from Swat River	24,000
Canal-Irrigated	20,000
Chahi (well-irrigated)	1,000
Land dependent on rain (Baranni)	40,000
Areas under different crops	
Rice	15,000
Maize	15,000
Sugar Cane	8,000
Wheat	30,000
Barley	15,000
Oil Seed	5,000
Vegetables	1,000
Fodder Crops	4,000
Fruit Trees	2,000

STATISTICS: HAZARA DISTRICT‡

The following figures give the percentage of area under crop in the Kharif and Rabi:

	Haripur	Abbottabad	Mansehra	Total District
Kharif	38	69	64	57
Rabi	62	31	36	43

The percentages of the total matured area under the more important crops are as follows:

	Haripur	Abbottabad	Mansehra	Total District
Maize	23	62	49	45
Rice	—	8	7	5
Kharif Pulses	4	7	7	6
Wheat	46	7	25	26
Barley	9	7	6	7
Oil seeds	3	1	2	2

* Final Report of the 3rd Regular Settlement of the Hazara District by K. B. I. Khalil Khan. Printed by the Manager, Government Printing and Stationery NWFP, Peshawar, 1953.

† Agriculture Department. Peshawar.

‡ Board of Economic Inquiry (University of Peshawar) 1956.

Cultivated and Waste Areas in Hazara District (in acres)
Based on 1901 and 1941–47 Settlement Reports

	Haripur		Abbottabad		Mansehra		Total District	
	1901	1941–7	1901	1941–7	1901	1941–7	1901	1941–7
Government Forests	32,590	26,068	47,588	46,763	83,151	84,586	155,642	157,417
Other Waste	243,869	239,663	262,196	260,839	688,656	697,286	1,180,805	1,197,788
Total uncultivated	276,459	265,731	309,784	307,602	771,807	781,872	1,336,447	1,355,205
Irrigated	21,550	22,082	6,259	86,830	13,727	17,044	40,368	45,956
Unirrigated	128,346	132,575	125,290	124,052	133,833	131,894	368,481	388,521
Total cultivated	149,896	154,657	131,549	130,882	147,560	148,938	408,849	434,477
Increase per cent. in cultivated area since last settlement	+14	+3	+21	0	+3	+1	+13	+6
Total amount of land available for cultivation	36%	37%	30%	29%	14%	16%	26%	27%

The following information taken from the Abbottabad Tahsil Assessment Report represents the average 'rates of Batai' (amount of the harvested crop) paid by tenant farmers in this region according to the various classes of soil they are farming:

1. Bari Abi (irrigated and manured land near the village or homestead) —the tenant must give his landlord on the average three quarters of the entire harvested crop.
2. Bahardi Abi (irrigated land at some distance from the village or homestead which receives less manure)—two thirds of the crop.
3. Maira-Kund-Bela (unirrigated loam and clay of varying quality)—one half of the crop.
4. Rakkar-Kalsi (bad stony land found generally at the base of hills or on the edges of ravines—or the soil of narrow plots on the sides of steep hills usually constructed on small terraces)—one third of the crop.

The Average Crop yields for the above general soil groups run as follows: (in maunds/acre; 1 maund = 82 pounds)

	Maize	Wheat
Bari-Abi	16–22	9–10
Bahardi Abi	14–18	8– 9
Maira-Kund-Bela	6–10	6
Rakkar-Kalsi	4–5	3

STATISTICS: PESHAWAR AND MARDAN DISTRICTS

The following agricultural* calendar shows the normal course of agricultural operations in the districts:

Month	Sowing of	Harvesting of	Other work done
Har (June-July)	Maize, chari, moth, bajra	Tobacco, melons, cucumbers, onions and other vegetables	Some ploughing is done, wheat is threshed
Pashakal (July-August)	Maize, mash, peas	—	Ploughing is done, wheat is threshed
Bhadron (Aug.-September)	—	—	Ploughing for Rabi harvest and weeding
Assun (Sept.-October)	Wheat, barley, mustard and shaftal	Cotton, vegetables and chari	—

* For the purposes of agriculture the year starts from the 1st of 'Har' (16th June), while for the revenue records it begins on 1st October (Assun). In Har all tenancies commence and terminate, agricultural partnerships are formed and mortgages revised.

Kattak (Oct.-November)	Sowing for Rabi, crops still goes on	Picking of cotton and chilli, maize, moth, mash and arhar	—
Maghar (Nov.-December)	—	Pressing of sugar cane	Should rain fall seasonably, some good lands which have yielded an autumn crop are sown with a spring crop
Poh (Dec.-January)	—	—	There is a little field work done, pressing of sugar cane and kharif threshing continues, Rabi crops irrigated and ploughing for kharif crops
Magh (Jan.-February)	—	Shaftal (January to June)	As Poh. Ploughing goes on
Phagan (Feb.-March)	Sugar cane, melons, cucumbers, onions and other vegetables	Peas	Ditto
Chet (March-April)	—	—	Ditto
Bisakh (April-May)	Tobacco, rice and arhar	Barley, mustard, gram, wheat	Moth for fodder is sown
Jeth (May-June)	Cotton and moth	Rabi harvesting completed, tobacco	—

The following information taken from the Charsadda Tahsil Assessment Report represents the average 'rates of batai' (amount of the harvested crop) paid by tenant farmers in this region according to the various classes of soil they are farming. It is worth noting that the kind rents paid are practically uniform according to the class of soil. They are as follows:

1. On 'nahri' lands (term applied to lands irrigated from private canals)

the tenant takes half the yield with the owner himself paying the land revenue and very often the water rates.

2. On 'shar nahri' lands (irrigated from state canals) generally the owner gets anything from a quarter to a third of the yield, but in this case the tenant always pays either the land revenue or water rates.
3. On the 'chahi' lands (land irrigated by lifts from wells) the owners get either a third or one half the total yield; in both cases the owners are responsible for the upkeep of the 'Persian wheels' and also pay the land revenue.
   a. In special cases, e.g. on the wells where tobacco is the main crop, the tenant receives one third share of the produce and all expenses of cultivation are borne by the owner.
4. On 'dagoba' lands (unirrigated tracts benefited by hill torrents aided by bunds and small earthen dams) the owner gets anything from a half to a third of the yield from these fertile but unirrigated tracts.
5. On 'maira' and 'baranni' lands (the high lying tracts which are entirely denuded and cut up by drainage are distinguished from the richer unirrigated lands on the lower levels and sometimes nearer the village sites; the former are classed as 'maira' and the latter as 'baranni') the rates are almost universal; the owner getting one quarter of the yields.

The average crop yields for the above general soil groups run as follows (in seers/acre; 1 seer—2.2 pounds):

	Maize	Wheat
Nahri	500–650	400
Shah Nahri	600–700	400
Chahi		
Chai	650	400
Dagoba	400	300
Maira and Baranni	200*	200*

*It is worth noting how much better wheat does on the poorer soils than maize, in view of maize's otherwise superior yields on all other classes of land.

A comparison of yields/acre in 1935 and 1955*

1. Wheat	1935	0.3	Yield/acre (in tons)
	1955	0.37	
2. Barley	1935	0.34	" " "
	1955	0.23	
3. Maize	1935	0.62	" " "
	1955	0.54	

* Calculated from 1935 and 1955 'Season and Crop Reports'.

Livestock Population 1895 and 1945*

	Bulls	Bullocks	Cows	Male Buffalo	Cow Buffalo
1895	—	127,138	86,272	6,329	26,142
1945	261	157,848	97,897	18,433	72,629

* Source: 'Season and Crop Reports.'

Types of Land Tenure—1951 Census

	Owning all the land	Owning and Renting	Renting all	Renting and Labouring	Landless Labourer
Mardan	39%	5%	23%	1%	10%
Peshawar	54%	7%	28%	1%	5%

STATISTICS: KURRAM AGENCY

The following table compares the percentage of the annual matured area under each important crop at the time of the 1901 and 1942–44 settlements:

	DAMAN		SAHRA RODGHARRA				TOTAL	
	1901	1942–44	1901	1942–44	1901	1942–44	1901	1942–44
				Kharif				
Rice	27	17	—	—	35	23	30	19
Maize	17	23	5	7	8	12	11	16
Mung (pulse)	3	6	5	12	16	14	10	11
Fodder and other crops	4	5	5	12	3	3	5	5
Total*	54	56	25	32	62	59	57	56
				Rabi				
Wheat	33	33	69	65	29	33	33	35
Barley	2	1	3	1	5	5	4	3
Fodder and other crops	10	8	2	1	4	3	6	5
Total*	46	44	75	68	38	41	43	44

* Does not include crops of minor importance.

The following table gives the percentage on total area of the important crops as well as their yield per acre in maunds:

Crop	Percentage on total area (1942–44)	Yield per acre in maunds 1942–44	1959–60
Wheat	35	9	10
Barley	3	12	12
Rice	19	18	20
Maize	16	12	12
Mung pulses	11	3	?
Mash pulses	5	4½	?
Total	89		

The following statistics indicated, by Assessment Circle, Acreage devoted in 1960 to the most important crops:

Koh-i-Daman

Kharif		*Rabi*	
Crop	Acreage	Crop	Acreage
Rice	4,006	Wheat	6,848
Maize	4,631	Shaftal	1,694
Total Pulses (mash, mung, etc.)	3,122	Barley	319
		Fodder	34
Vegetables	629		
Fodder	324		
	Sahra		
Rice	85	Wheat	2,260
Maize	358	Shaftal	56
Total Pulses (mash, mung, etc.)	1,517	Barley	56
		Fodder	46
Vegetables	32		
Fodder	84		
	Rodgharra		
Rice	6,495	Wheat	10,162
Maize	3,776	Shaftal	1,197
Total Pulses (mash, mung, etc.)	5,437	Barley	879
		Fodder	108
Vegetables	35		
Fodder	29		

Area Held by Different Tribal Groups in the Kurram Agency in 1901 and in 1942–44 (by Assessment Circle)

Koh-i-Daman Circle

1901 Tribe	No. of Owners	Area in Acres Total	Cultivated	% of total cultivated area
Turi	3,827	6,866	6,216	39
Bangash	2,016	3,893	3,260	20
Sayid	1,910	2,832	2,564	16
Mangal	620	463	419	3
*Parachamkani	140	218	201	1
Other tribes	306	321	297	2
1942–44				
Turi	5,185	6,484	5,491	32
Bangash	2,915	3,877	3,403	19
Sayid	2,677	2,969	2,678	15
Mangal	1,311	594	495	3
Parachamkani	212	182	171	1
Other tribes	557	354	314	2

Sahra Circle

1901 Tribe	No. of Owners	Area in Acres Total	Cultivated	% of total cultivated area
Turi	1,167	3,757	2,992	91
Bangash	14	25	22	1
Sayid	48	211	126	4
Mangal	7	11	10	—
Parachamkani	—	—	—	—
Other tribes	7	21	16	—
1942–44				
Turi	1,549	3,844	3,152	70
Bangash	28	62	43	1
Sayid	72	222	149	3
Mangal	22	17	17	—
Parachamkani	—	—	—	—
Other tribes	11	11	5	—

Rodgharra Circle

1901				
Turi	3,468	7,312	6,547	41
Bangash	1,382	3,544	3,168	13
Sayid	865	1,957	1,762	11
Wattizai	328	1,569	710	4
Alisherzai	180	590	506	3
Manatwal	272	506	454	3
Mangal	19	33	30	2
Parachamkani	9	15	13	1
Other tribes	668	1,228	1,018	7
1942–44				
Turi	unknown	7,369	6,083	34
Bangash		3,242	2,587	15
Sayid		2,015	1,664	9
Wattizai		881	555	3
Alisherzai		594	396	2
Manatwal		512	293	2
Mangal		33	30	—
Parachamkani		15	13	—
Other tribes		911	787	5

* Although treated separately here the Parachamkani are in reality a tribal section of the Turis and were once called 'Para Khel'.

Amount of Cultivation (in acres) in the Assessment Circles

1. Koh-i-Daman	
a. 1901	16,022
b. 1942–44	17,370
c. 1959–60	25,775
2. Sahra	
a. 1901	3,279
b. 1942–44	4,498
c. 1959–60	6,747
3. Rodgharra	
a. 1901	18,197
b. 1942–44	17,648
c. 1959–60	28,640

Land Tenure Statistics 1958–59 (on cultivated land)

1. 27,141 acres are being farmed by the owners themselves.
2. 2,738 acres is the area being cultivated by tenants free of rent or at a nominal rent.
3. Occupancy Tenants
   a. 5,251 acres—paying at revenue rates with or without 'Malikana' (proprietary rights).
   b. 252 acres—paying other cash rents
   c. 580 acres—paying in kind.
4. Without Occupancy Rights (Tenants-at-will)
   a. 1,716 acres—paying at revenue rates, etc.
   b. 213 acres—paying other cash rents
   c. 4,409 acres—paying in kind.

APPENDIX 4

CROP STATISTICS FOR TOCHI VALLEY, 1959–60

Rabi

1. Wheat—yields average 12 maunds/acre

* *a.* Nahri Ekfasli 4,907 acres
* *b.* Nahri Dofasli 3,485 „
* *c.* Abi Ekfasli 757 „
* *d.* Abi Dofasli 249 „

2. Barley—yields average 12.5 maunds/acre

a. 561 acres
b. 401 „
c. 116 „

Kharif

1. Rice—yields average 12.5 maunds/acre

a. 521 acres
b. 468 „
c. 14 „
d. 48 „

2. Maize—yields average 18 maunds/acre

a. 283 acres
b. 2,352 „
c. 307 „
d. 31 „

* *Nahri Ekfasli*—This has an insufficient water supply in the Kharif, when the river is usually low and the supply is absorbed by the dofasli lands, but receives ample irrigation in the Rabi.
Nahri Dofasli—This has an abundant water supply all the year round, and usually produces two crops in a year.
Abi—This is not irrigated from the Tochi, but from springs which are often brackish; limited to only a few villages.

Crop Estimates for South Waziristan—1960 (Wana area only)

Rice, 180 tons—Total Production.
Wheat, 4,637 tons—Total Production.

AGRICULTURAL STATISTICS FOR D.I.K., 1960*

(all figures given are in acres)

1. *Irrigated area*	
a. Total area	96,173
1 matured	57,877
2 failed	38,356
b. Sources	
1 canals	38,446
2 tube wells	15,932
3 kalapanis†	40,968
4 other	827
2. *Unirrigated area*	
a. Total area	318,598
1 matured	140,349
2 failed	178,249
b. Sources	
1 baranni‡	213,734
2 rod-kohi	78,648
3 selab§	26,216
3. *Total area of district*	2,213,131
a. Area unavailable for cultivation	564,937
b. Area under forest	9,557
c. Area lying unbroken but eventually cultivable	1,022,895

* From Deputy Commissioner's office, D.I.K.
† Perennial hill torrents.
‡ The terms baranni and rod-kohi in D.I.K. are often used interchangeably.
§ Another form of rod-kohi cultivation.

APPENDIX 5

IRRIGATION SYSTEMS

1. *Hazara District*

a. Government Canals—

Upper Siron Canal—designed to irrigate the once higher baranni lands of the Pakhli plain. This recently completed gravity flow canal is 14.4 miles in total length and has a 15.6 cusecs* capacity. It has brought an additional 2,000 acres under cultivation.

2. Lower Siron Canal—is also designed to irrigate areas in the Pakhli plain; in addition to 500 acres irrigated by private canals in the area it irrigates another 6,000 acres. It is a gravity flow canal with a 30 cusecs discharge. The main branch, together with its two side branches, reaches a total length of about 16 miles. It should be noted that the discharge of the Siron river at Shinkhiari reaches its maximum in July with 700 cusecs and a minimum in December of about 200 cusecs.
3. Ichar Canal—is a gravity flow canal with a 14 cusecs discharge consisting of a main canal about 5 miles long and a branch canal 1.3 miles. It irrigates an area in Mansehra Tahsil of about 3,000 acres. The Ichar River itself has a maximum discharge in July of about 500 cusecs and a minimum in December of about 150 cusecs.

b. Civil Canals—the upkeep of these canals is largely a local affair though the District Commissioner's office oversees the entire operation.

1. Dauer System—in Haripur Tahsil is about 1.8 miles long and irrigates 1,500 acres. Its discharge is roughly 10 cusecs.
2. Panjkatha System—is a 3-mile long canal located in Haripur Tahsil on the Hare River. It irrigates about 3,000 acres and has a discharge of 32.45 cusecs.

2. *Peshawar—Mardan Districts*

a. Government Canals—

1. Lower Swat Canal—was opened for irrigation in 1885 and as such is the first canal of its kind in the province. It takes off from the left bank of the Swat River at Munda Qila where the river first enters the Basin and irrigates the whole south-eastern area of Charsadda Tahsil as well as the middle tract of Mardan Tahsil. The main canal has a discharge of 700 cusecs and together with its branches is 22 miles in length. Its distributaries (minor canals) have a total length of about 173 miles.

* Number of cubic feet per second passing a given point.

2. Upper Swat Canal—which takes off from the Swat River at Amandarra in the Malakand Agency was first opened for irrigation in 1914. This canal serves wide areas in the north of Mardan Tahsil, in Swabi Tahsil and in the extreme north-eastern corner of Charsadda Tahsil. Together with its branches this 2,178 cusec discharge canal has a total length of 138 miles, while its distributaries have an incredible length of 403 miles.
3. Kabul River Canal—opened in 1893 this canal takes off from the right bank of the Kabul River near Warsak and irrigates considerable areas in Peshawar and Nowshera Tahsils. It has a 417 cusecs discharge and contains 65 miles of main canal and branches. Its distributaries have a total length of 13 miles.

Cropping patterns on the area served by the upper, lower and Kabul River canals

	Kharif Area (percentages)				
	Maize	Sugar cane	Fodder	Miscellaneous	Total
Upper Swat Canal	52	17	28	3	100%
Lower Swat Canal	44	20	28	8	100%
Kabul River Canal	50	13	7	30	100%
	Rabi Area (percentages)				
	Wheat	Sugar cane	Fodder	Miscellaneous	Total
Upper Swat Canal	56	15	20	9	100%
Lower Swat Canal	54	15	24	2	100%
Kabul River Canal	54	10	27	9	100%

Source: Irrigation Dept. Govt. of Pakistan, Warsak High Level Canals, April, 1957 (Peshawar, Ferozsons, 1957), p. 3.

4. Pehur Canal—is an inundation canal which takes water by way of a cut from the Indus a few miles from the town of Topi in Swabi Tahsil. Originally designed to irrigate 60,000 acres of land, partly served by the tail of Upper Swat Canal, this canal has turned into a miserable failure. Since it was first opened about ten years ago it has one of the highest maintenance costs of any canal. So much silt accumulates in it, carried in from the Indus and by storm water drainage, that it must be cleared on the average three times a year if it is to be fully operative.
5. Warsak High Level Canals—are a direct development of the Warsak dam. The entire project is designed to irrigate 119,300 acres of largely barren land in the Khyber Agency and Peshawar District. Canals take off from both the right and left banks of the Kabul River from the reservoir area upstream from the dam. The water set aside for irrigation purposes has a 500 cusec capacity in the Kharif and 350 cusecs in Rabi.

a. Right Bank Canals:—these consist of a 44.6-mile 255 cusec gravity flow canal and 36.6-mile long 200 cusec lift canal. Before bifurcating into the gravity flow and lift canals the main canal flows under the Kullagori hills in an 18,000-foot tunnel. When fully operative, the gravity flow canal will irrigate a total of 62,000 acres and the lift system 46,326 acres. The lift canal is maintained by pumping water to a height of 160 feet.

b. Left Bank Canal—first crosses the Mohmand hills by an 8,600 foot tunnel before emerging into the plains in an open 18.5-mile long canal. It is designed to carry a discharge of 45 cusecs and when fully completed will bring a total of 11,000 acres under irrigation.

Proposed cropping pattern for Warsak high level canals

Kharif Area (percentages)

Maize	Cotton	Sugar Cane	Rice	Miscellaneous
50	20	15	5	10

Rabi Area (percentages)

Wheat	Barley	Fodder	Miscellaneous
50	20	20	10

6. Bara River canals—about 28,000 acres of land are irrigated by this system which are essentially inundation canals.
7. Keshgi Lift scheme—pumps 100 cusec of water from the Kabul River into an artificial lake, the water of which is used to irrigate 11,500 acres of previously barren land.
8. Kandar and Tangi Lift schemes—irrigate 2,400 acres near Risalpur from the Kalpane stream and 1,766 acres in the north-west part of the vale from the Swat River respectively.

b. District Board Canals—includes only two small works, the Michni-Delazak Canal and Shakkadar branch canal which together irrigate 3,758 acres along the Mohmand Agency border.

c. Private Canals—about 30 per cent. of the canal-irrigated area of the district receives irrigation from what are described as 'private' or non-government canals. They can be described as belonging jointly to the groups of landowners who are entitled to irrigate from them and are responsible for their maintenance and upkeep. The Doba and Sholgirah tracts in the Charsadda Tahsil and the whole northern and south-western areas in the Peshawar Tahsil are irrigated almost exclusively by these canals, which are normally no more than cuts made from the banks of the Kabul River and its associated streams. The names, area covered and capacity of these canals are as follows:—

Canal	*Area Covered*	*Capacity (cusecs)*
Shaikham	30,008	150.8
Doab Canal	25,564	350
Jui-Sheik	24,020	354
Sangu	13,556	151.2
Sholgra	5,677	174
Jui Zardad	1,653	31

A special feature of the irrigation system in Swabi Tahsil is that 56 per cent. is accomplished by the 'Persian wheel'.

3. *Kohat District*
Irrigation at the present time plays a relatively minor role in Kohat District; only 14 per cent. of the arable land is under irrigation. There are no government canals in operation. Irrigation is made possible only by local cuts in the Kohat and Teri Tois or else by springs which are fairly numerous in the Miranzai valley. Tank irrigation which is extremely rare on the Frontier is found in the Kohat Basin and is capable of irrigating about 2,000 acres.

4. *Bannu District*
About 21 per cent. of the district's cultivated area is under irrigation. In the doab itself (between the Kurram and Gambila) irrigation runs as high as 85 per cent. of the cultivated area. All of the canals involved in irrigating these areas are classed as civil canals. In this case they are administered by the District Commissioner's office, but are actually maintained by the cultivators themselves. About 112,000 acres are irrigated by these civil canals which for the most part are nothing more than cuts taking off from the river bank. Waterlogging is now taking on serious proportions at the tail end of the irrigated area, in this case the water table is only 3 to 4 feet below the ground surface.

5. *Dera Ismail Khan District*
The only canal of note in this district is the government inundation canal known as the Paharpur canal. Taking off from a cut in the Indus River about 20 miles north of Dera Ismail Khan city, the canal parallels the Indus (several miles) for its total 42-mile length. It has 15 miles of distributaries, and when in full operation during the Indus floods it has a capacity of 1,100 cusecs. It irrigates annually roughly 40,000 acres. As with the case of most inundation canals it suffers very badly each year with silting and hence involves considerable expense in its maintenance. D.I.K. District is also now being served by an increasing number of tube wells, almost all of which are either government built or subsidized.

Irrigation Projects Being Considered or Already Under Construction

1. *Peshawar District*
a. Warsak High Level Canals—although it was included under the

category of an existing irrigation system a certain amount of work still remains in its construction. This is particularly so in the case of the left bank canal.

2. *Kohat District*
   a. The Kohat Toi Reservoir scheme known as the 'Banda-Tanda Dam Project' is under active consideration for development in Kohat District. Preliminary investigations involving borings and soil investigations have already been completed. The scheme aims at harnessing the flood water of the Kohat Toi by means of a 200 foot high earthen dam near Banda Tanda village south of Kohat City. It is thought that the 110,000 acre feet storage capacity of the reservoir produced by this scheme will irrigate an additional 65,000 acres of land.

3. *Bannu District*
   Some 2 miles away from the already functioning Kurram Garhi weir a storage dam has been built on the Baran nullah which, when completed in the middle of 1963, irrigated an additional 150,000 acres in the district. The system is called the Right Bank canal.

4. *Dera Ismail Khan District*
   One of the most promising and sorely needed schemes in the province is the Zam Gomal Flood-control Irrigation Project. Known popularly as the Tul Kach scheme, it involves the construction of a 250 foot high Concrete Buttress Dam across the Gomal River. With an estimated 1,000,000 acre feet formed by its reservoir, it will provide 290 cusecs of perennial irrigation. Besides bringing 75,000 acres of very fertile land under irrigation and establishing flood control over a very dangerous torrent, the project also envisages the generation of 7,400 kW. of electric energy. Its construction in tribal territory has involved a number of complications which certainly has had a hand in delaying its construction.

Electric Power in the NWF

Prior to Pakistan's emergence as a nation in 1947, the only hydro-electric station operating in the NWF was the Jabban Power House at the foot of Malakand Pass. At that time there were three generating sets of 3,200 kW. each. By 1951 local demand had necessitated the installation of two more generators of 5,000 kW. each, raising Jabban's installed capacity to 19,600 kW. With the erection of a subsidiary power house at Dargai the Malakand power complex was considerably enlarged by the installation of another two 5,000 kW. generators.

Although there were diesel sets in operation in Bannu, D.I.K., Tank and Lakki with a total capacity of about 15,000 kW. prior to Partition, these were designed only to meet the needs of the urban centres in which they were located. In order to make electric power available to the rural areas of the southern districts as well, the Kurram Tarhi Hydro-electric project was completed in 1958. This scheme at its present level of development

has two 2,000 kW. power stations located at the dam site about 7 miles upstream (Kurram River) from Bannu City.

The Warsak Multi-Purpose Hydro-electric project, which was completed in 1961 at an estimated cost of 70,000,000 dollars, has an installed capacity of four 40,000 kW. power-generating units, with further provision when it becomes necessary for two such additional units. As soon as the electric transmission lines are strung and the necessary technical equipment installed, power will be sent via a double circuit 132 kV.* line directly to Rawalpindi, Lahore, Lyallpur and other points in the Punjab. This line will eventually be tapped at Peshawar in order to feed power into the N.W.F.P. grid. This is by far the largest single project of its kind in all of West Pakistan.

Electric Transmission Lines

The main source of electric power today is still the Malakand power complex.† A66kV. double circuit line emanates from the Malakand power-generating units to a Grid Sub-Station located at Mardan. Here the line bifurcates with one 66 kV. line running via Charsadda to Peshawar while the other runs via Nowshera to Peshawar. This ring system is responsible for supplying power to both Peshawar and Mardan districts.

The Dargai power house is interlinked with Jabban as well as by a 132 kV. line to the Wah Grid Sub-station near Rawalpindi, which, in turn, is also linked by a 66kV. line to the Mardan Grid Sub-Station. On the basis of power being fed into it from both Dargai and Mardan, the Wah station distributes power along a 132 kV. line into the major urban areas of the Punjab, while a 66 kV. line feeds Haripur, Abbottabad and Mansehra in Hazara District. The 66 kV. line running from Mardan to Wah is tapped at Jahangira in order to supply power to a large part of Nowshera Tahsil, while an 11 kV. line feeds Swabi and Topi directly from Mardan.

In order to feed Kohat District with power, a 66 kV. line stretches from the Peshawar Grid Sub-Station to Kohat, and a 33 kV. line is extended from Kohat in order to reach the urban centres in Hangu and Thal. Another 33 kV. line links Landi Kotal in the Khyber Pass to Peshawar. Peshawar is also linked with the large urban centre, Shabkadar, by a separate 11 kV. line. A 33 kV. line also reaches Sardu Sharif and Mingora in Swat State direct from the Malakand power house.

The two small power houses at Bannu (Kurram Garhi) feed a 66 kV. line which extends to Dera Ismail Khan City. Intermediate stations along this line are located at Tajazai and the other at Tank. Tajazai is interconnected by another 66 kV. line to Daud Khel in the Punjab from which power can be diverted, or, in an emergency, be given from the Kurram Tarhi power house. An 11 kV. line reaches from D.I.K. to Kulachi and another from Tajazai to Lakki. Another 66 kV. line is at present under consideration for construction in North Waziristan.

*Kilovolt.

† See section on Malakand Agency.

APPENDIX 6

INDUSTRIAL DEVELOPMENT

The government body responsible for business expansion in the Frontier is the Pakistan Industrial Development Corporation. The mission of this organization is the establishment of industries essential to the economic development of the country, but for which public funds are not readily forthcoming. In most cases the completed projects have either been offered for outright sale to private interests, or else public limited companies are floated and the shares offered for sale to the public. The two major PIDC-sponsored industrial concerns to date are the Armangarh Paper Board Mill in Nowshera and the Bannu Woollen Mills. Eighteen of the major industries in the N.W.F. have been set up by private investment; of these five are public limited concerns and thirteen are private.

Present Estimated Industrial Output or Capacity of the Major Industries of *the NWF*

1.	Premier Sugar Mill (Mardan)	3,000 tons crushing capacity daily
2.	Charsadda Sugar Mill (Takht Bhai)	1,500 tons crushing capacity daily
3.	Frontier Sugar Mill (Takht Bhai) (public limited concern—only large industry existing before Partition)	1,000 tons crushing capacity daily
4.	Colony Sarhad Textile Mills,* Noshera	25,000 spindles, 350 looms
5.	F. P. Textile Mills, Jahangira	12,500 spindles, 200 looms
6.	Shah Textile Mills, Charsadda	50 looms
7.	Nishat Textile Mills, Peshawar	12,500 spindles, 250 looms
8.	Swat Textile Mills, Haripur	10,000 spindles
9.	Bannu Woollen Mills, Bannu	2,840 spindles, 24 looms
10.	Leather-Tanning Industry—NWF Industries' (Public Limited Concern)	Annual production is: 15,000 pieces—vegetable, 12,000 pieces—chrome
11.	Zeb Corn Products Ltd., Peshawar	3,000 tons annually

* It should be noted that there are a total of 85,000 spindles in the entire NWF.

12. Frontier Fruit-Processing Co., Nasarpur	Annual production : 18 lakh tins (30 oz.) and 12 lakhs of bottled items
13. Pakistan Flour and General Mills, Peshawar	2,500 maunds of wheat-grinding daily
14. Frontier Industries (Re-rolling Mills), Peshawar—M.S. Rounds	8,400 tons annually
15. Karimi Industries—(Re-rolling Mills), Peshawar—M.S. Rounds	6,000 tons annually
16. Pakistan Tobacco Co. (Re-drying plant), Akora (Public Limited Concern)	12 million lb. annually
17. Nowshera Chemical Works, Nowshera	Caustic soda—5,000 tons annually Chlorine—2,400 tons annually
18. D.D.T. Factory, Nowshera	700 tons annually
19. Rosin and Turpentine Factory, Haripur	Rosin 75,000 maunds annually Turpentine 93,000 gallons annually
20. Amangarh Board and Paper Mills, Nowshera	7,500 tons annually of paper board
21. Ferozsons Laboratories, Nowshera (Pharmaceuticals)	480,000 lb. spirit annually, 240,000 lb. non-spirit annually
22. Govt. Telephone Factory, Haripur (set up in conjunction with the Siemens Company of Germany)	7,000 instruments annually, 5,000 exchange lines annually
23. Frontier Match Factory, Girhi Habibullah	24,000 gross annually

INDUSTRIAL SCHEMES IN THE INDEPENDENT TRIBAL AREAS

1. *Woollen Training cum Production Centre Batkhela* (Malakand Agency). This training centre was established in 1953 in an effort to familiarize local weavers with modern methods of woollen weaving and with other processes such as dyeing and finishing. The centre now has 20 trainees working on a 3-year course. A commercial section producing cloth, shawls, etc., is now in the process of being set up at the centre.

2. *Woollen Training cum Production Centre Wana* (South Waziristan). This centre has almost exactly the same programme as Batkhela.

3. *Woollen Training cum Production Centre Miran Shah* (North Waziristan). This centre also has a programme similar to Batkhela although it is not nearly so well developed yet.

4. *Patti Manufacturing Centre Chitral.* This scheme envisages a complete overhaul and centralization of this famous cottage industry. It is reckoned that once this scheme is fully operative it will not only mean a substantial increase in the 500,000 yards of patti cloth currently being produced in Chitral state, but will also result in an improved quality cloth. The use of modern machinery was planned for this native industry in 1961.

5. *Metal Industries Centre Kohat Pass.* This project is an effort to diversify the arms-manufacturing centre at Darra. Its function will be to impart training, advice and assistance and in some cases even provide raw materials to those engaged in light metal industries other than arms manufacture. The centre was due to be launched in 1961 and is to include 3-year courses in the following trades: foundry and machine shop, smith, turning, fitting-finishing and electro-plating.

6. *Metal Industries Training Centre Wana.* Also due to open at the same time as the Kohat Pass scheme, have the same function and provide similar courses.

7. *Stone and Woodworking Training Centre Chitral.* This centre is planned to accommodate 30 trainees.

8. *Reorganization of the Silk Centre Chitral.* This industry which was started in 1958 is now being enlarged because of the earlier successes achieved by it. Under this scheme local artisans are being given training in the art of silkworm rearing, reeling etc. In order to boost income a reeling and re-reeling section are being added.

9. *Reorganization of the Silk Centre Parachinar.* A programme similar to the one outlined for Chitral is now in operation here.

10. *Establishment of a Silk Centre Miran Shah.* The programme initially launched in Chitral is now being undertaken in Miran Shah.

11. *Establishment of a Silk Centre Wana.* Same as above.

Interview with the Manager of the Azad Goods Transport

With 50 trucks under its management, plus additional sub-contracting of trucks when the demand calls for it, this company is the largest of its kind on the Frontier. The greatest proportion of this firm's business is the trans-shipment of fruit (mainly grapes, apples, peaches and dried raisins) brought into Peshawar from Afghanistan. This usually takes place between May and October; because of the heavy increase of freight that the inflow of fruit causes, this is known as the 'busy season'. Freight rates are

accordingly higher during this period,* than during the so-called 'slow season' from November through to April.

Although the Central Government has set a load limit of 130 maunds per truck, the truckers invariably carry more, especially during the busy season. In order to prevent any spoilage and ensure rapid delivery of the fruit a bonus of 50 rupees is paid the operator if he manages to arrive in the market where the fruit is to be sold on the same day he leaves Peshawar. In 1960 the first consignment of grapes to be shipped from Afghanistan left Peshawar on an Azad transport truck on 15th August for the Punjab and India. The charge for a 130 maund load to the Indian border is about 350 rupees. In no instance are these rates fixed according to any rules; rather they vary considerably according to the competition of the people using the service as well as the immediate availability of transport. Still, the above-mentioned represent a fairly good average.

During the slack season mostly 'gur' and hides are shipped out of Peshawar for other places in Pakistan. The usual products brought in by these trucks on their return journeys are cloth from Lyallpur, soap from Sialkot and a wide range of manufactured items (both Pakistani and foreign-made) from Lahore and Karachi.

During the 'slow season' month of February (1961) this company had accounted on its books a total of 136 separate truckloads leaving Peshawar. In the previous 'busy season' month of October (1960) a total of 365 separate trips were listed. About 60 per cent. of the October trips were either to Lahore or the Indian border; in February there was a greater proportion of down country trips and many reached all the way to Karachi.

* Freight rates (based on a 130 maund load):

Service	*Slow Season*	*Busy Season*
Peshawar—Rawalpindi	90 rupees	120 rupees
Peshawar—Lahore	200 rupees	350 rupees
Peshawar—Karachi	1,100 rupees	1,500 rupees

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PLATES

The village of Reshun, Chitral State, situated on an alluvial fan

Plate 1

The Indus River Gorge above Patan

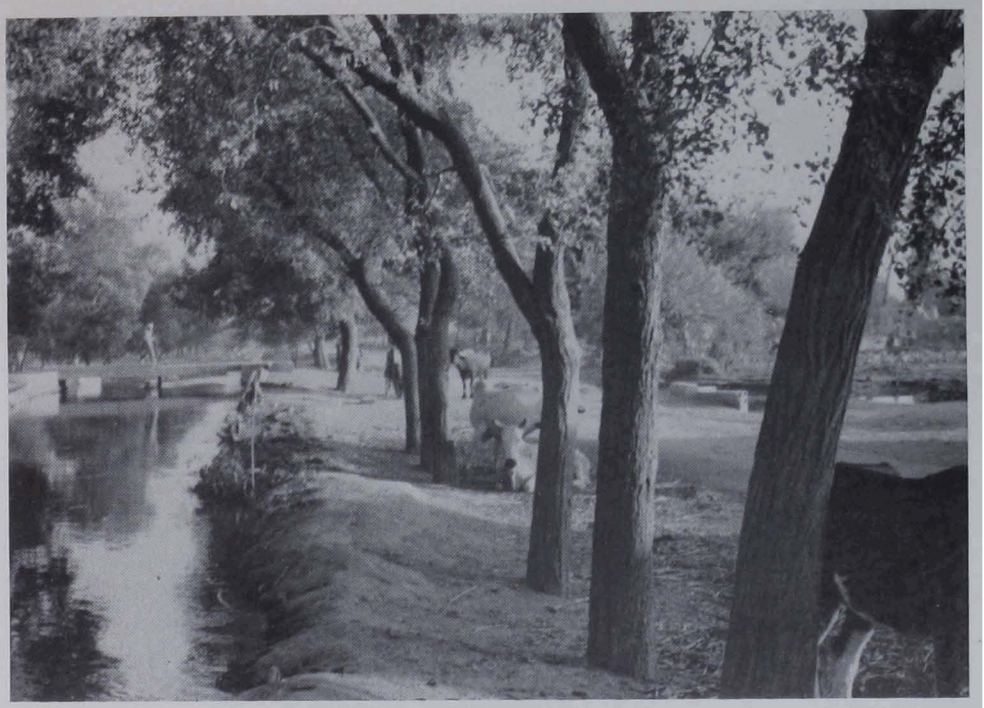
a. Gujars

b. Remains of a Buddhist stupa

Plate 4

a. Peshawar's vertical development

b. A typical narrow lane



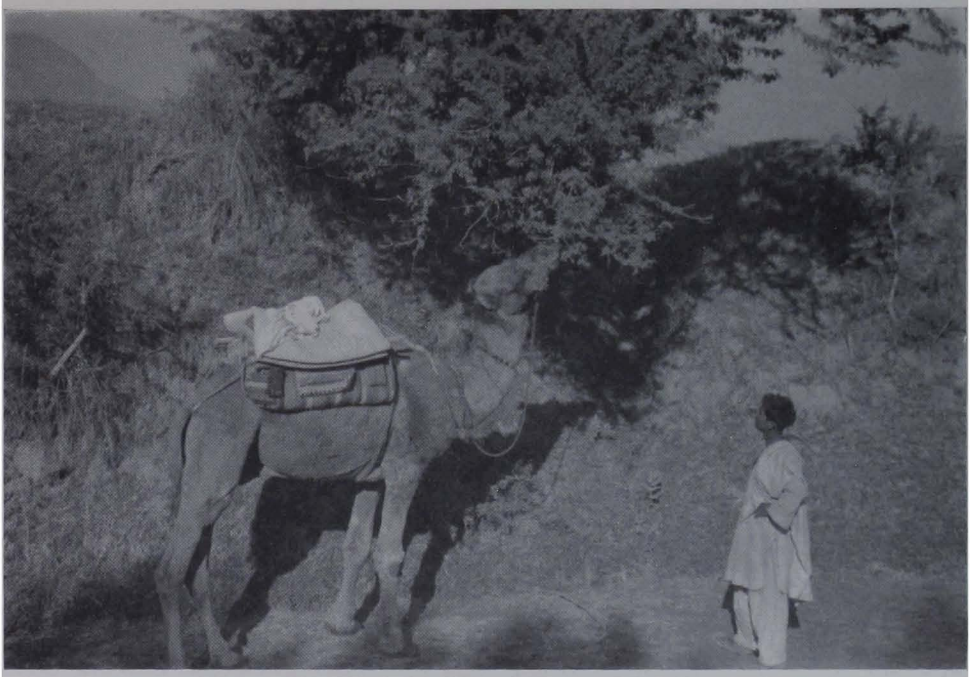
a. Canal irrigation in Mardan District

b. Harvesting sugar cane in Peshawar District

Plate 6

a. Khyber Pass

b. Maidan Valley



a. Camel browsing

b. Pilfering Mazri from a government owned area

Plate 8

a. The 'Sahra'

b. Kurram River

a. Rodgharra land

b. Land fragmentation

Plate 10

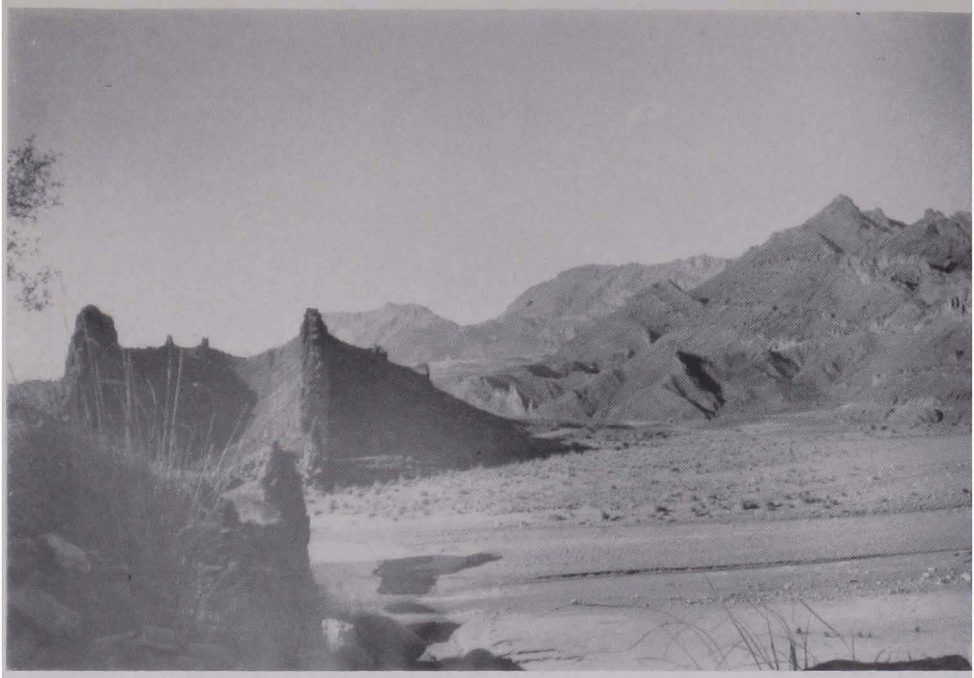
a. Nastikot village

b. An inside view . . .

a. Poor millet crop

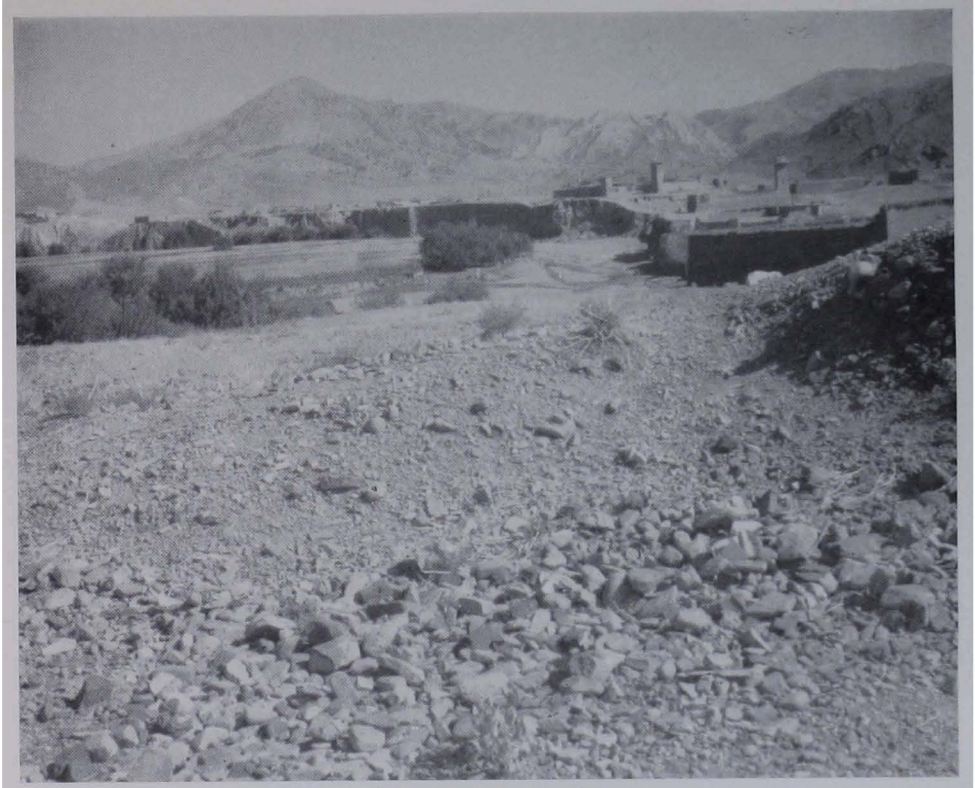
b. Bannu City

Plate 12



a. Tochi River with Siwalik Hills in the background

b. Barren denuded hills near Bannu



a. Fortified Wazir village

b. Wazir militiamen

Plate 14

a. Rod-Kohi cultivation

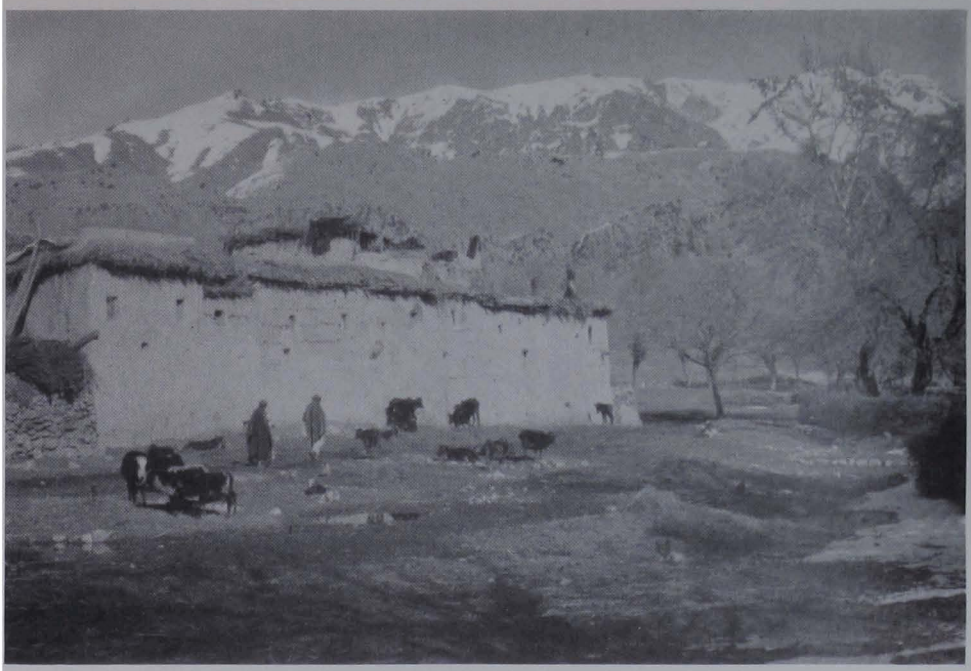
b. The 'Daman' near Dera Ismail Khan

The salinity problem as it exists near Mardan City

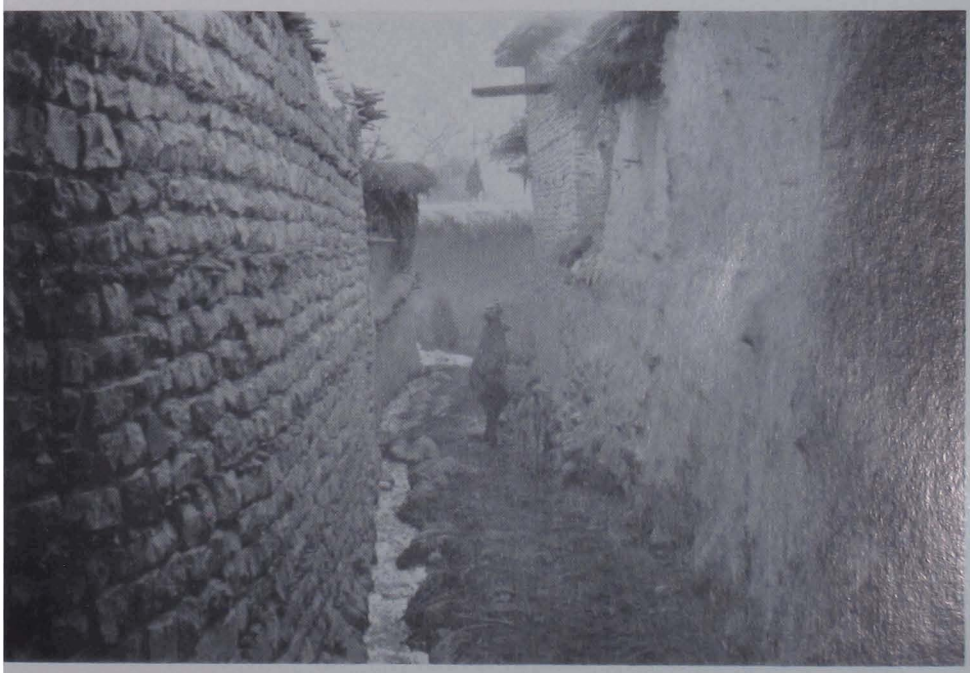
Plate 15

Plate 16

Afghan trucks assembled in Peshawar for journey to Kabul



a. The 'vesh' village

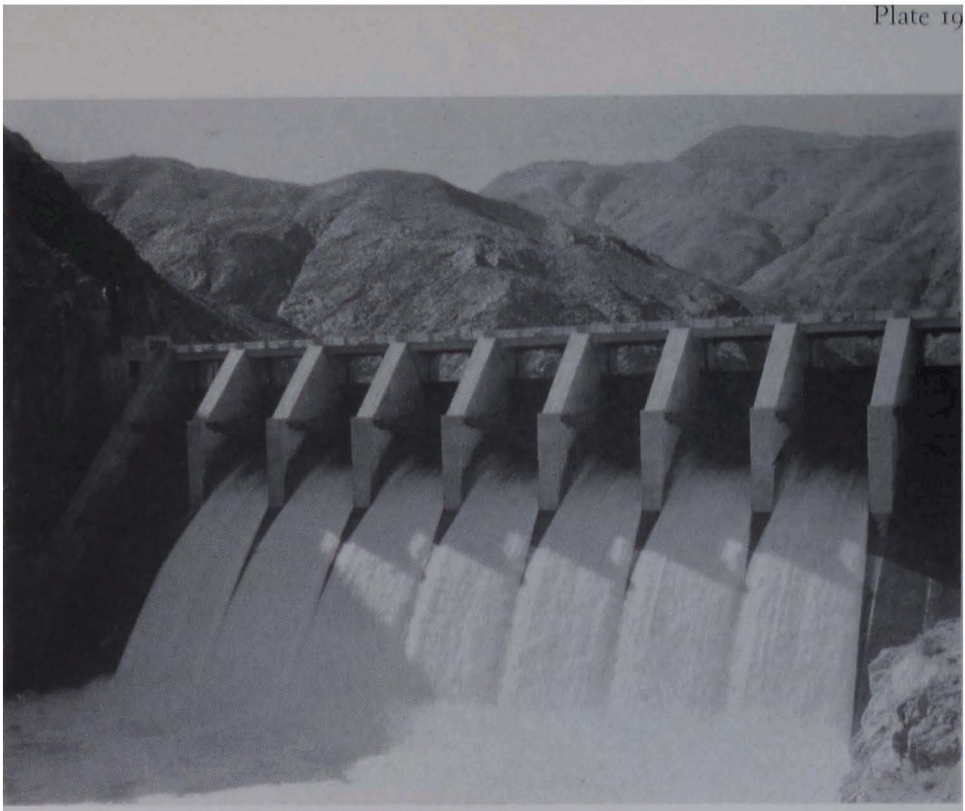


b. Narrow village lane

Plate 18

a. Kalla Khel near Bannu City

b. Zatam



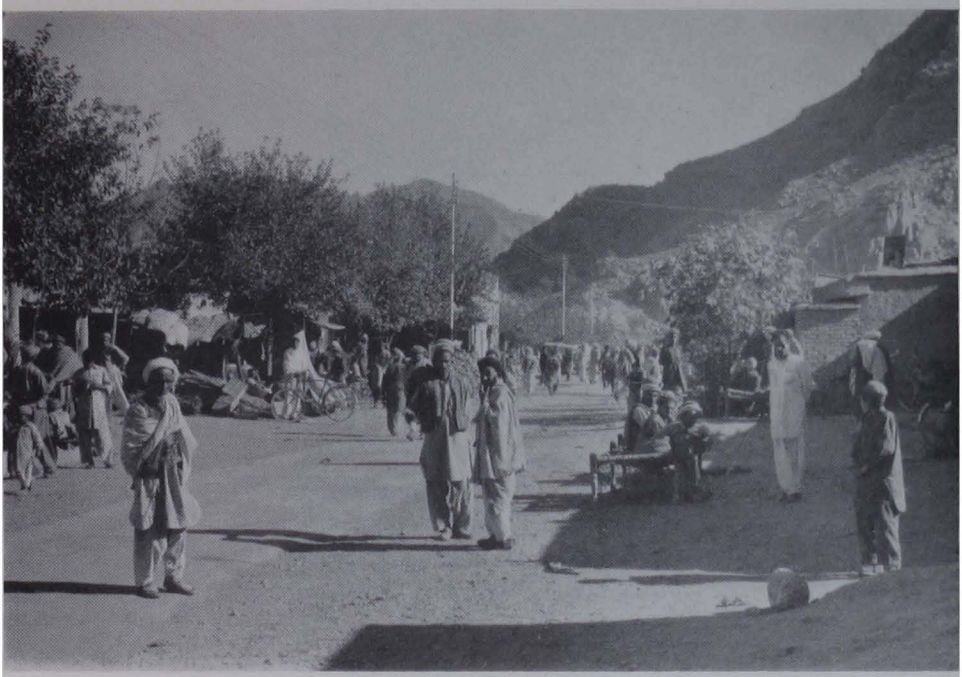
a. Warsak Dam

b. Canals—the lifeblood of fertile Peshawar District

Plate 20

a. Pahapur Canal near Dera Ismail Khan

b. Persian water-wheel



a. Darra village—the principal gun-making village of the NWF (near Kohat City)

b. Making rifle bores—a 'cottage industry' in Darra Village