

1. Wakhan Corridor near Qadzi Deh. Snow-covered mountains in background are in U.S.S.R. August, 1966

Afghanistan Defined

YAGHISTAN, as the Amir Abdur Rahman Khan (1900, II, 157) referred to his country (particularly the tribal belt between British India and Afghanistan), has been variously translated: "Land of the Unruly," "Land of the Free," "Land of Rebels," and "Land of Insolence" (Coon, 1951b, 295-323).

The insolence of the Afghan, however, is not the frustrated insolence of urbanized, dehumanized man in western society, but insolence without arrogance, the insolence of harsh freedoms set against a backdrop of rough mountains and deserts, the insolence of equality felt and practiced (with an occasional touch of superiority), the insolence of bravery past and bravery anticipated.

The name Afghanistan simply means "Land of the Afghan." Some non-Afghans profess, at least half-jokingly, to believe that Afghan may have derived from the Persian word "afghan" (spelled the same as Afghan, افغان), defined as "noisy," "groaning," or "wailing," indicative of the way many Iranians have always felt about their linguistic and cultural cousins to the east.

The patterns of Persian poetry more probably account for the "wailing": originally, افغان meant "wailing." To improve the rhyme and rhythm, Persian poets added the *alif* or "a" (See Chart 7) to form the more poetic افغان. Another example is فرشته (angel), which poets changed to افروشته, *afristeh* (Shpoon, personal communication, 1969).

Variations on the word Afghan in reference to people may go back as early as a third century A.D. Sasanian reference to "Abgan" (Caroe, 1965, 79-80; A. Habibi, 1969). The earliest known reference to the Afghans in a Muslim source probably occurred in A.D. 982 (Caroe, 1965, 112), but tribes related to those of the modern Afghans probably have lived unrecorded in the region for many generations.

For millennia, the land now called Afghanistan sat in the center of the action, the meeting place of four ecological and cultural areas: the Middle East, Central Asia, the Indian subcontinent, and even the Far East, for the Pamir Mountains intrude into Chinese Sinkiang.

Palaeolithic man probably lived in the caves of northern Afghanistan as long as 50,000 years ago. North Afghanistan also possibly sits in the zone of the development of the domestication of the wheat/barley, sheep/goat/cattle complex, the Neolithic Revolution which gave man

control of his food supply about 11,000 years ago, which led ultimately to the urban civilizations of the Nile Valley, the Tigris-Euphrates Valleys, and the Indus Valley. Post-World War II excavations in south-central Afghanistan point to intimate relationships with the Indus Valley civilization, fourth-second millennia B.C.

Another important event in world history occurred in the Afghan area as a result of Alexander's passage through the region in the fourth century B.C. Out of a mixture of the sensuous Indian, humanistic classical, and vigorous Central Asian-Sino-Siberian ideologies rose the Mahayana Buddhism practiced in most of the modern Far Eastern world. As a result of intensive contacts, particularly from the first to the fifth centuries A.D., the Mahayana (northern school) ideology and its attendant art styles traveled across Central Asia through the Dzungarian Gates to Mongolia, China, Korea, and eventually to Japan along the luxury trade Silk Route, which connected ancient Cathay with the Mediterranean classical world of the Roman Empire. During the early part of this east-west contact, Buddhist artists first began to depict the Buddha in human form, essentially an orientalized version of the Greek god Apollo.

The great civilizations of early Asia were based on the control and use of water, and great surpluses then created great civilizations and empires (Wittfogel, 1957).

Islam exploded into the region by the mid-seventh century A.D., and remains an important element in modern cultural and political patterns. Traditionally an area through which armies passed on their way to somewhere else, Afghanistan nevertheless witnessed the rise of several of its own indigenous empires. The Ghaznavid (tenth-twelfth centuries A.D.), probably the most important, was a true renaissance of juxtaposed military conquests and cultural achievements.

Political instability, brought on by the destructive Mongol and Turco-Mongol invasions of the thirteenth-fourteenth centuries A.D., and recurring localized, fratricidal wars broke up the Silk Route trade, and by the fifteenth century European navigators sought new sea routes to the East, which led to the rediscovery, exploitation, and development of a New World.

Asian imperialists (Persian Safavids and Indian Moghuls) fought over the Afghan area in the sixteenth-seventeenth centuries A.D. but in 1747 the last great Afghan empire rose under the leadership of Ahmad Shah Durrani, crowned king in Qandahar.

Fratricidal tribal wars and the intrusion of European imperialism into the area characterized nineteenth-century Afghanistan. Twice (1839, 1878) British armies invaded Afghan territories in response to real or imagined threats to India as Tsarist armies moved into the Muslim khanates of Central Asia, including lands claimed by the Afghan amirs.

The creation of modern Afghanistan began during the reign of Abdur Rahman Khan (1880–1901). While external powers (Britain, Russia) drew the boundaries of Afghanistan, the Amir attempted to spread his influence (if not actual control) over the myriad ethnic groups and tribal kingdoms included inside his boundaries, a process of “internal imperialism.” Indeed, before 1880, the Afghans themselves referred to their area variously as Kabulistan (south of the Hindu Kush to the Indus River), Zabulistan (or Khorasan, including the Hindu Kush, Qandahar, and Herat), and Turkestan (north of the Hindu Kush and east of Herat) (Kakar, 1968, 1).

Most Afghan historians, followed sheeplike by western scholars, consider 1747 (Ahmad Shah Durrani) the beginning of the modern Afghan state.

I disagree, for, until 1880, the process of alternating fusion and fission dominated the political scene. By political fusion and fission, I mean the following pattern of events: A charismatic leader arises in a tribal society and, by military power, intrigue, and judiciously arranged marriages, unites several tribes into a confederation, which spreads as far as its accumulated power permits, creating an *empire*, not a *nation-state*. With (sometimes before) the death of the emperor, fission occurs, and the great empire once again segments into a multiplicity of tribal kingdoms. Later, another charismatic leader arrives and the process is repeated. (See Chart 21 for graphic representation of fusion and fission in later Afghan history.)

Ahmad Shah Durrani, therefore, created a Durrani empire, not a nation-state. Even before his death, the tribal wars and struggles for individual power within the various branches of the ruling family began, and they continued into the twentieth century.

British and Russian imperialism, however, blocked Abdur Rahman Khan, preventing him from spilling over into India, Persia, and Central Asia and creating another great Afghan empire. European imperialism had replaced Asian imperialism in the region.

The British, with at least the tacit consent of the Russians, controlled Afghan relations with other countries until 1919, when the Afghans

INTRODUCTION

gained the right to conduct their own foreign affairs after the Third Anglo-Afghan War. The Afghans consider 1919 as the year in which they truly became independent of foreign domination.

Three words characterize twentieth-century Afghanistan: non-alignment, independence, development, themes which, in varying degrees of intensity, describe the entire developing world today. The creation of new nations after World War II forced the major powers to realize that no nation, however remote, is unimportant. Post-World War II Afghanistan became an "economic Korea" and the interplay between the Soviet Bloc and the West (mainly the United States and West Germany) found Afghanistan serving as a catalytic agent to force both sides to shift from *de jure* competition to *de facto* cooperation, offering lessons in dynamics for the rest of the developing world. Naturally, the specifics of the Afghan experience cannot be transplanted to the heartlands of other developing nations, but a study of Afghanistan's recent history may help others understand the processes involved in changing from a tribal society to a nation-state.

In 1964, Afghanistan launched a new democratic experiment, and today tries to create a constitutional monarchy within a parliamentary framework. The real power, however, remains vested in a liberal king currently backed by a liberal army elite.

Created partly as a result of imperialism, but never a colony, Afghanistan, like all new states, now tries to build a stable nation, but with an overwhelming 90-95% non-literate population, a basically agrarian economy, and a peasant-tribal society with loyalties oriented locally and not nationally. The task of achieving stability may not be impossible, but it is certainly challenging.

ACKNOWLEDGMENTS

PRIMARILY a preliminary statement after twenty years of research and intimate relations with Afghanistan and surrounding areas, this book attempts the impossible: to present a study of a single piece of real estate through time, from one cell up, from the Stone Age to tomorrow. The approach, therefore, is micro- (or mini-), not macro-, like that of Oswald Spengler and Arnold Toynbee. Neither is the book meant to replace the classic modern works of Caroe (1965), Fraser-Tytler (1967), Klimburg (1966), or Wilber (1962). With no single theoretical bias, some discussions may appear out of proportion to others, but the main purpose should be kept in mind: this is an attempt by an anthropologist to ferret out the patterns, functional and dysfunctional, in the total synchronic-ecological-cultural sense.

Since 1949, when I first became interested in Afghanistan as a specific field of research, literally thousands upon thousands of people of many nationalities have contributed to this book, some in literature, others in personal communications, most in face-to-face situations. Eventually, I hope to be able to thank one and all in the traditional Afghan face-to-face manner.

However, some individuals read the manuscript (or parts of it) before publication and must be directly acknowledged. Dr. Donald N. Wilber did me the honor of reading and objectively criticizing the entire manuscript in draft form, and I am most grateful to him for his contributions. Abdul Raziq Palwal, Institute of Anthropology, Kabul University, also read the whole manuscript and offered many valuable suggestions.

I owe a great deal to Professor A. A. Michel (University of Connecticut), Professor Laurence H. Lattman (Pennsylvania State University), Dr. Alfred Schreiber (Niedersächsisches Landesamt für Bodenforschung, Hannover) for their comments on the geography and geology sections. Dr. Dexter Perkins, Jr., and Mr. Peter Edmonds supplied additional information on the fauna. Others contributing to and/or criticizing various sections are as follows: Professor Ludwig Adamec (Part IV); M. Paul Bernard (Chapters 14, 15); Mr. Winstanley Briggs (Chapter 24, the economic section); Mr. Abdul Qadir Fahim (Chapter 9); Mr. Qasem Ghazanfar (Chapter 7); Mr. A. G. Ghaznavi (Chapter 11); Dr. Thomas Gibson (Chapter 24, the economic and foreign assistance sections); Mr. H. Jadir (Chart 23); Professor M. Amir Kaify (Part IV); Professor Mohammad Hasan Kakar (Chapter 18); Dr. Abdul

Kayeum (Parts I, II, IV); Said Mohammad Maiwand (Chapter 22); Dr. Leon Poullada (Part IV); Mr. Shafie Rahel (Chapter 24); Professor Mohammad Hussain Razi (Chart 23); Said Qassim Rishtya (Part IV); Mr. Mohammad Moosa Shafiq (Chapter 24, the constitutional section); Mr. Abdussattar Shalizi (general comments on selected sections); Mr. Saduddin Shpoon (Chapter 7); Mr. Wali Shah Wali (Chapter 11); Mr. Abdul Wahab Tarzi (Chapters 20, 21).

To Peter Gold (text) and David Schalliol (photographs) go my great thanks for Appendix E: Folk Music and Instruments. Sayyid A. Husani, Faculty of Letters, Kabul University, did the excellent calligraphy for Chart 7. Richard S. Davis assisted in tracing various elusive bibliographic references. Rafi Samizay, Faculty of Engineering, Kabul University, drew Diagrams 1-3 and 5 for which I thank him profusely. Nicholas Amorosi, Museum of Natural History, drew the implements in illustration 73.

The excellent maps were drawn by Mr. Douglas Waugh of the American Geographical Society, and the many thousands of words in this book would have little meaning without his contribution.

All photographs except the following were taken by the author: Afghan Films, 2, 18, 98-103; Professor Jimmy Bedford, 95; Délégation Archéologique Française en Afghanistan, 75e, 76-80; Nancy Hatch Dupree, 41, 54, 57, 68-70; Hubbard Goodrich, 33; H. E. Klappert, 74; *Life*, 75a; Ministry of Information and Culture, Government of Afghanistan, 16, 93-94; L. V. Peterson, 75f-i; Josephine Powell, 39, 60, 64, 75b, 81-82, 84; Khalilullah Enayat Seraj (KES) Collection in the National Archives of Afghanistan, 86 (KES 2), 87 (KES 15), 88 (KES 158), 90 (KES 1313), 91 (KES 2188), 92 (KES 804/9); private collection, 89.

Many institutions have materially contributed to my twenty years of Afghan research and I gratefully acknowledge each: American Geographical Society; American Museum of Natural History; American Philosophical Society; Arctic-Desert-Tropic Information Center (Dr. Paul Nesbitt, Director; Dr. Oliver L. Austin, Jr., staff scientist), Air University; The Pennsylvania State University; India Office Library and Files of the Commonwealth Office, London (with particular thanks to the Librarian, S. C. Sutton, and Martin Moir, Esq.); Kabul University; National Museum of Afghanistan, Kabul; the Ministries of Information and Culture and Education, Royal Government of Afghanistan; Social Science Research Council, New York; Wenner-Gren Foundation for Anthropological Research, Inc.; National Science Foundation GS 2459; Institute of Archaeology, Royal Government of Afghanistan.

The following very kindly gave permission to quote certain materials: Abdul Raouf Benawa (Chapter 7); S. Shpoon (Chapters 7, 17); Major J.C.E. Bowen (Chapter 7); D. MacKenzie, *Poems from the Divan of Khushal Khan Khattak*, George Allen and Unwin Ltd. (Chapter 7); E. Howell and O. Caroe, *The Poems of Khushal Khan Khatak*, Pashto Academy, University of Peshawar (Chapter 7); Sir Jogendra Singh, *The Persian Mystics*, John Murray (Publishers) Ltd. (Chapter 7); unpublished Crown copyright material in the India Office Records transcribed in this book (Chapters 17-18) appears by permission of the Secretary of State for Foreign and Commonwealth Affairs, United Kingdom.

The American Universities Field Staff (Alan Horton, Executive Director; Phillips Talbot and Teg Grondahl, former Executive Directors), for whom I now work, has permitted me unlimited freedom of research since 1959, and such a book as this would never have been possible without such unqualified support. In addition, Mr. Grondahl and Dr. Horton have given me permission to quote (or paraphrase) extensively from my *A.U.F.S. Reports* on Afghanistan, published between 1950 and 1971 (Appendix H).

For their patience and perseverance while editing and designing from 10,000 miles away, I owe special thanks to the staff at Princeton University Press, particularly R. Miriam Brokaw, Associate Director and Editor in Chief, who encouraged me from beginning to end; George Robinson, my gentle but persuasive editor; and Helen Van Zandt, designer, who appreciated the visual qualities of Afghanistan and the Afghans.

To my wife, Nancy, go general thanks and specific love for helping me plod through this manuscript. All of the things I could say to her in public have been said before, and all of the things we have said in private remain ours alone.

Note on Transliteration

In transliterating Persian terms into English, I have tried to follow as closely as possible (but without diacritical marks) the report from the Subcommittee on Transliteration (February 17, 1959) to the Committee on Near and Middle Eastern Studies, Social Science Research Council, New York, on "Transliteration of Persian for Library Cataloging Purposes," in conjunction with Steingass (1930) and S. Haim (1934-36). I hope that personal preferences which have crept in may be forgiven, since I make no pretense at being a language scholar. For Pashto, I attempted to agree with D. Mackenzie (1951).

ACKNOWLEDGMENTS

A phonemic note: The *و*, usually transliterated "u," has more of an "o" sound in Afghan Dari than in Iranian Farsi. Therefore, I often use "o" rather than "u," simply because the latter more closely approximates the Afghan pronunciation. Besides, over ninety percent of the Afghan population is non-literate, and, to add to the complications, no adequate Afghan Dari-English dictionary exists, and many Afghan literates (including scholars) disagree on transliterations. Some of the terms used in this book have never been written down in Dari, for they constitute part of the folk language of the villager and nomad. Whenever possible, I have requested from individuals still living their own preference in the spelling of their names in English.

In conclusion, I must confess I go along with Col. T. E. Lawrence and his contempt for transliteration nit-pickers: "Arabic names won't go into English, exactly, for their consonants are not the same as ours, and their vowels, like ours, vary from district to district. There are some 'scientific systems' of transliteration, helpful to people who know enough Arabic not to need helping, but a wash-out for the world. I spell my names anyhow, to show what rot the systems are" (*Revolt in the Desert*, 1927, xv). Professor Richard N. Frye says practically the same thing about Persian in his classic *The Heritage of Persia* (1963, xviii-xix).

I hope that this book will establish guidelines for further investigation as well as present a reasonable survey of available data. Particularly, I hope platforms will be established from which Afghan scholars can launch research projects of their own.

Total responsibility for content, opinions expressed, false facts, and misinterpretations, however inadvertent, is mine alone. May Allah have mercy on me for my presumptuous insolence!

LOUIS DUPREE

PART I. THE LAND

HALF WAY around the world from the United States sits land-locked Afghanistan, a harsh, brutal, beautiful land, dominated by the disembodied mountainous¹ core of the Hindu Kush, the westernmost extension of the Karakorum Mountains, and the Himalayas, which push from the Pamir Knot into central Afghanistan in a general northeast-southwesterly trend to within one hundred miles of the Iranian border. The ranges stretch about 600 miles, or 966 kilometers, laterally, with the average north-south measurement being 150 miles, or 240 kilometers. The Pamir Knot contains more than 100 peaks which rise between 20,000 and 25,000 feet, or 6,100 and 7,620 meters, the highest in Afghanistan being Naochak (24,500 feet; 7,470 meters). The higher peaks in the central Hindu Kush² vary from 14,000 to 17,000 feet, or 4,270 to 5,180 meters. The highest peak, Shah Foladi, in the Koh-i-Baba range of the central Hindu Kush, reaches an altitude of almost 17,000 feet, or 5,140 meters.

Many passes cut through the central Hindu Kush mountains, and in the past provided the main routes north and south.

North of the Hindu Kush lie the Turkestan Plains, rolling semi-deserts with altitudes between 900 and 1,200 feet, or 270 and 370 meters. The flood plains of the Amu Darya (classical Oxus) River and its tributaries are relatively level and, in some places, marshy.

The dry western and southwestern sections of Afghanistan, extensions of the Iranian Plateau, rise gradually in altitude from west to east. In-

¹ Geographic names vary in time and space. I have attempted to use locally recognizable names. Coordinates in the index will help the reader locate most places mentioned in the text.

² Almost all references in Western language sources define Hindu Kush as "kills the Hindu," a grim reminder of the days when many Indians died in the high mountain passes of Afghanistan on their way to the slave markets of Muslim Central Asia. According to most Afghan scholars with whom I have talked, however, Hindu Kush is probably a corruption of *Hindu Koh*, name of the mountain range which, in pre-Muslim times, divided the area of dominant Hindu control to the south and southeast from the non-Hindu areas of the north, whose people were probably Zoroastrians and may have later developed into the modern Tajik. Another possibility is that Hindu Kush means "water mountains." The Avestan *Hindu* may be an equivalent of the Vedic *Sindhu*, which also means water or river.

hospitable stony deserts dominate, but sandy deserts of considerable size exist in Registan south and east of the Hilmand River.

Anyone flying over Afghanistan will be struck by the nakedness of the terrain. Bare rock dominates dramatically everywhere above 14,000 feet or 4,270 meters. Scrub vegetation and grasslands cover most lower altitudes. Occasional clumps of trees appear in the foothills of the northern slopes of the Hindu Kush. True forests exist only in eastern Afghanistan, mainly in the provinces of Paktya, Ningrahar, and Kunar.

Ecologically, most of Afghanistan is semi-desert, with bare patches of ground showing through the vegetative cover. Even the high-valley vegetational patterns of the Wakhan Corridor are semi-desert.

The lush vale of Jalalabad, often described as "subtropical," actually has a "dry-summer subtropical" or "Mediterranean" climate and needs extensive irrigation to grow citrus fruits, rice, and sugar cane. Probably the best climatic analogues in the United States exist in the Imperial Valley of California and the Arizona citrus-fruit areas (Michel, 1959, 29).

Although extensive and certainly not easily negotiable, the mountains of Afghanistan never truly served as barriers to cultural, economic, or political penetration, but merely funneled peoples and ideas along certain routes. Seasonally, the mountains and passes laden with snow could not be breached, so trading and raiding groups made end-arounds, skirting mountains until they reached the great gap between the Hindu Kush and Elburz Mountains (Iran). The terrain in the gap consists of lowland deserts, swamps, and plains extending from the Herat-Mashhad (Iran) line to Qandahar,³ from which India lies open and vulnerable.

³ Qandahar can also be transliterated Kandahar. According to Fussman (1966, 33), Qandahar is Farsi under Arabic influences; Kandahar, Pashto. I prefer Qandahar because the common spelling in modern Afghan literature continues to follow the Arabic "q" (ق).

Geographic Zones

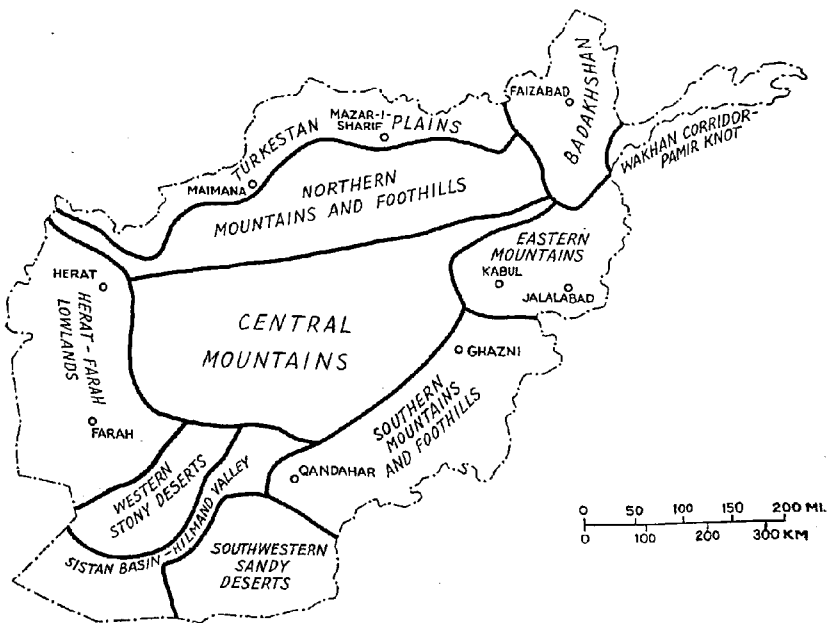
THE diverse geographic zones of Afghanistan are discussed from the point of view of total ecology, emphasizing lines of human contact and communication in reference to zones of accessibility and relative inaccessibility. Therefore, Map 2-A should be examined in conjunction with Maps 3, 4, 6, and 9, to understand better the criteria used to delimit the zones.

The Danish geographer Humlum (1959) divided Afghanistan into ten natural provinces: East, South, Central, West, Northwest, North, Nuristan, Badakhshan, Wakhan, Monsoonal Afghanistan (Map 2-B). Those who wish to savor Humlum's fine work and detailed descriptions of the geographic areas are invited to consult his volume, and recommended to read Michel's review (1960), in which he primarily disagrees with the inclusion of Jalalabad in Monsoonal Afghanistan. Michel feels that Jalalabad, with less than eight inches of rainfall, almost dry summers, and infrequent frosts, should, on the Köppen-Trewartha system, be called "subtropical steppe, dry summer" (Michel, 1960, 359-60).

Climate varies considerably, both diurnally and annually. Generally, however, Afghanistan has hot, dry summers and cold winters with heavy snowfalls in the mountains. In November, the snow line begins to creep down the mountains, and stops at about 6,000 feet (1,830 meters) above sea level. Average annual precipitation registers less than 13 inches (21 centimeters). Extremes vary from about two inches (3.2 centimeters) in the southwestern deserts to 13 inches (21 centimeters-plus) in the eastern part of Afghanistan. Maximum precipitation, about 36 inches (58 centimeters) annually, occurs in the Salang Pass area. As can be seen from Chart 1, the wettest months occur regionally at different times during the year, a phenomenon related to location, elevation, and exposure. Much of the rain falls during the winter months (December to February). In the Kabul Valley, however, summer Indian monsoons occasionally push rains into the area. Precipitation increases with elevation, and most water resources of Afghanistan result from the melt waters flowing out of the Hindu Kush.

From November to March, snow blankets the mountains. Peaks over 18,000 feet (5,500 meters) are permanently snow-covered, and several

(A)



DW

DUPREE, 1969

(B)



DW

HUMLUM, 1959, PAGE 103

GEOGRAPHIC ZONES

sizable glaciers still exist in northeastern Afghanistan. When snow begins to melt in March, the rivers begin to rise. Seasonal fluctuations occur simultaneously because the rivers get their waters from the same geographic source. Most rivers have maximum flow in the spring and minimum in summer, autumn, and winter. The major exception, the Wakhan Corridor, has maximum melt in late August, and daily fluctuations are spectacular. Small, fordable streams in early morning become torrents in the late afternoon, as water from snow melted by the midday heat flows down to the high valley plains of the Wakhan.

In many instances, minimum precipitation means drying up, or reduction of a river to a series of isolated pools in the stream bed. At times, premature warm weather or sudden rainstorms cause flash floods which catch and destroy whole semi-nomadic or nomadic camps as they pause seasonally in arroyos. Such a flash flood caught Alexander the Great during his invasion of the Afghan area (Burn, 1962, 164).

The Eleven Geographic Zones

The first six zones (the Wakhan Corridor–Pamir Knot, Badakhshan, Central Mountains, Eastern Mountains, Northern Mountains and Foothills, Southern Mountains and Foothills) relate to the Hindu Kush mountain system, young rugged ranges (like the Rocky Mountains) with sharp peaks, deep valleys, and many almost impenetrable barriers. The remaining five zones (Turkestan Plains, Herat–Farah Lowlands, Sistan Basin–Hilmand Valley, Western Stony Deserts, Southwestern Sandy Deserts) embrace the deserts and plains which surround the mountains in the north, west, and southwest (see Map 2).

The Wakhan Corridor and the Pamir Knot: This unique area belongs geographically to the greater Pamir Mountain system. The Anglo-Russian Boundary Commission of 1895–96 politically forced this zone on Amir Abdur Rahman Khan, so that at no point would British India and Tsarist Russia touch.

Many writers indiscriminately lump the Wakhan Corridor and the Pamir Mountains together and fail to distinguish between the sub-zones. In reality, the Corridor is one geographic entity and the Pamir Mountains another, although the Wakhan leads directly into the Pamir. I have been reminded (Michel, 1968) that "Pamir" actually refers to the high and relatively flat valleys between the mountain ranges, where the Kirghiz graze their flocks.

Two relatively wide valleys exist in Wakhan: one at Ishkashim (two miles across, three miles long); another at Qala Panja (less than a mile in all directions).

"Pamir Knot," although scientifically unacceptable to many, aptly describes the fist-like ranges which pivot off the Karakorum, Kunlun, and Himalayan mountains, shifting the trend from roughly southeast-northwest to northeast-southwest through Afghanistan. According to Humlum (1959, 17) 82.9 percent of the Wakhan-Pamir area is above 10,000 feet (3,000 meters), and 17.1 percent between 6,000 and 10,000 feet (1,800 to 3,000 meters). Perpetual snow covers all the Pamir above 16,500 feet (5,000 meters) above sea level. Many glaciers nestle at the higher elevations. Blue-green glacial lakes, such as Sar-i-Köl, shimmer. Passes thread through the high mountains at between 11,500 and 14,800 feet (3,500 to 4,500 meters), often 1,700 to 3,000 feet (500 to 1,000 meters) higher than the valley bottoms (Humlum, 1959, 112).

Mountain climbing in the Hindu Kush has increased considerably during the past few years. Several recent expeditions have climbed many peaks in the mountains south of the valley of the Ab-i-Panja (border with the U.S.S.R.), which later becomes the Amu Darya. In 1965, for example, at least twenty major foreign expeditions, including groups from West Germany, Japan, Poland, the United States, the United Kingdom, Czechoslovakia, Austria, and Italy, climbed mountains in the Afghan Hindu Kush.

Travel in the Pamir, which begins east of Qala Panja, is difficult, even with the hardy yak used by the Kirghiz nomads. In the sparsely populated Wakhan along the Ab-i-Panja, the people use the Bactrian (two-humped) camel and the horse. An unpaved, natural road follows the high, alpine valley of the Ab-i-Panja from the entrance of the Wakhan to Qala Panja. Trucks occasionally travel between Ishkashim and Qala Panja, and a Land Rover can breeze along the road at fifty kilometers an hour.

Often, however, the river narrows to less than one hundred yards and the ubiquitous Soviet watch towers stretch to cast shadows on Afghan soil, which accounts for the Afghan reluctance to permit foreign visitors to hunt in the home of the *Ovis polii* (Marco Polo sheep). Incidentally, even Russians have difficulty visiting the Pamir, because of the Afghan-Chinese border.

Several seasonally closed passes lead from Wakhan to Hunza and Chitral in Pakistan: Baroghil Pass; Dorah An (called Kach in Paki-



2. Pamir Knot. August, 1969. *Photo: Afghan Films*



3. Badakhshan. Durrani Pushtun nomads on way from Lake Shewa winter pastureslands in Turkistan Plains. August, 1966

stan) Pass. The Kilik (or Wakhjir) Dawan leads from Kashmir into Chinese Sinkiang and on to Tiwa and Urumchi, following former important trade and communication routes traveled by Marco Polo and earlier a flanking force of Genghis Khan, among others. In August, 1969, the Pakistanis, in cooperation with the People's Republic of China, reopened an old route between Chinese Sinkiang and Gilgit, which can be utilized only seasonally, however.

Badakhshan: Geographically, Badakhshan stretches from the entrance of the Wakhan to Kotal-i-Anjuman in the south and west, with the Amu Darya as boundary to the north. The Ab-i-Panja flows to the north near Ishkashim (entrance to the Wakhan) and cuts a large salient out of Central Asia as it patiently makes a parabolic swing to the west and south, thus avoiding the northeast mountains of Badakhshan.

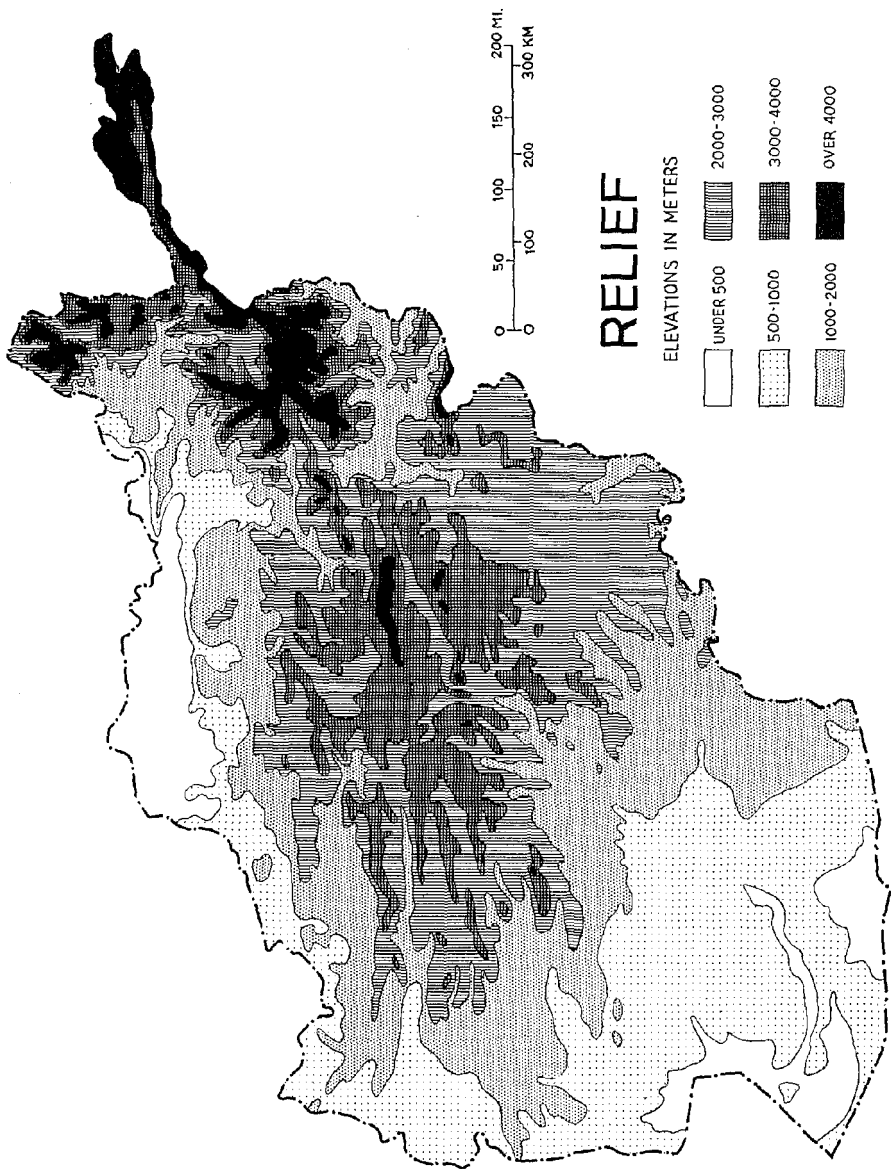
High elevations over 10,000 feet (3,000 meters) constitute 27.5 percent of the terrain; 6,000 to 10,000 feet (1,800 to 3,000 meters), 36.2 percent; 2,000 to 6,000 feet (600 to 1,800 meters), 32 percent; 1,000 to 2,000 feet (300 to 600 meters), 42 percent, as one approaches the Turkestan Plains (Humlum, 1959, 17).

The sharp, rugged Koh-i-Khwaja Mohammad range in northern Badakhshan has been cut in many places by the Kokcha River 30 to 80 feet (9 to 25 meters) into the rock of the valley floor. The steep mountain slopes are covered with rockfall and talus. In the river valleys, up to three series of stream-laid gravel terraces occur, often cut several times by recurrent, spring melt-water floods.

An inhospitable but beautifully sculptured region, Badakhshan consists mainly of metamorphic and plutonic rocks, dissected by V-shaped valleys, which funnel most life into narrow trails.

Several of the open valleys surrounded by mountains and watered by streams, but mainly by springs, appear to have been glacial lakes during the Late Pleistocene. One such series of valleys lie west of Kishm, just north of the great mountain, Takht-i-Sulaiman (Throne of Solomon).

Several significant lakes exist in Badakhshan, the subject of many learned papers by British explorers in the nineteenth and early twentieth centuries. Thousands of nomads gather at the largest, Lake Shewa, in the summer, and return to the Turkestan Plains (near Chahar Darra, west of Kunduz) or eastern Afghanistan (Laghman), in the winter. Most Laghman nomads, however, go to the Central Mountains in the summer.



Central Mountains: The Central Mountains (mainly the Central and Western Hazarajat) extend roughly from Shibar Kotal through the Koh-i-Baba range. A series of passes leads across this great range, crossed by many conquerors, including Alexander, Genghis Khan, Babur, and Tamerlane. The two major passes are Shibar and Salang. No motorable road went through the Hindu Kush until the reign of King Mohammad Nadir Shah (1929-33), when the Afghans completed a long-time dream by building a road which traveled circuitously via Shibar Pass through the Hindu Kush. The road followed the Ghorband and Surkh Ab river valleys for most of its course. But a major engineering miracle occurred in the late 1960s when, with Soviet financial and technical assistance, the Afghans constructed a tunnel through the heart of the Hindu Kush, just south of the summit of Salang Pass at an altitude of 11,100 feet (3,363 meters) above sea level.

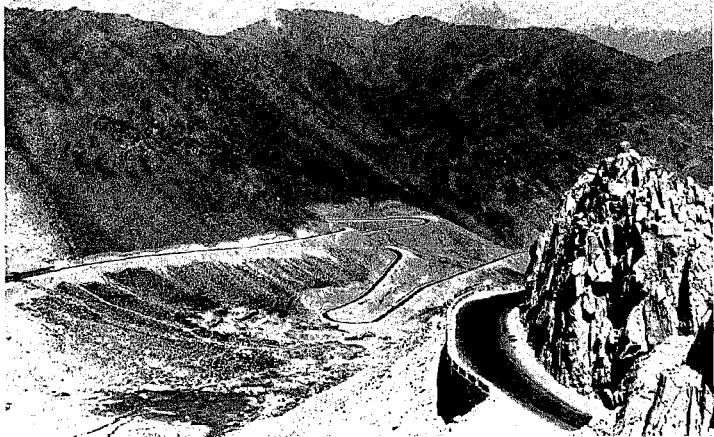
West of Shibar Pass, the Koh-i-Baba mountains, backbone of Afghanistan and a rugged, barren elevated tableland, contain sources of several of the country's more important river systems: the Kabul, Hilmand-Arghandab, and Hari Rud (see Map 4).

The highest peaks in the Central Mountains vary between 14,000 and 17,000 feet (4,270 and 5,180 meters), with the summit of the Koh-i-Baba range at Shah Foladi, about twenty miles from Ak Sarat Pass. Slopes on the north are gentler than those to the south.

Talus covers the lower mountain slopes of the Hindu Kush, and the river valleys are choked with boulders and gravels laid down in winter and moved along with great rapidity by spring snow melt. The few wide valleys are usually inhabited and cultivated or, if at high altitudes, used as summer grazing lands for livestock. These high altitude summer pasture lands are usually called *yilq*.

Eastern Mountains: The Eastern Mountains (as well as the others in Afghanistan) were presumably subjected to the same orogenic movements which uplifted the Himalayas proper (probably during the Middle Tertiary and later, or between 15 to 40 millions of years ago), folding and distorting the original sedimentary deposits, laid down in the Tethys Sea and extensive Middle Eastern Mesozoic (70 to 225 millions of years ago) marine basins.

At times, the uplifted mountainous areas were subjected to intensive glacial and fluvial erosion during the Pleistocene (Ice Age), which began about a million or a million and a half years ago. In addition, repeated tectonic stress during the mountain building movements created



4. Central Mountains. Salang Pass looking southeast from southern end of Russian-built tunnel. August, 1966



5. Central Mountains. Unai Pass looking eastward. October, 1966

great fault systems. Most valleys (such as Ghorband, Kabul, Panjsher) are marked by fault lines created chiefly by Alpidi (Tertiary) movements. Although many valleys are narrow, some wider intermontane basins do permit agriculture. Frequent earthquakes, about fifty shakes of varying intensity per year, still occur.

To call the mountain systems of Afghanistan tortured is not trite, but concise.^{1,2}

Four major valleys dominate the human geographic patterns of the Eastern Mountains.

Kabul (an area of high level basins, with altitudes varying from 5,000 to 12,000 feet—1,500 to 3,600 meters—filled with probable Neogene and Pleistocene sediments) is surrounded by mountains of old rugged crystalline and metamorphic Palaeozoic rocks. The Paghman Range sits northwest of Kabul, with the Safed Koh to the southeast and the Koh-i-Baba rising in the west. The Kabul River flows through Tang-i-Gharu, one of the more spectacular gorges in Afghanistan, to Jalalabad.

The second major valley, *Kohistan-Panjsher*, includes the wide basin of Koh Daman and Charikar and leads to the steep-sided valleys of Nijrao and Tagao, where farmers practice terraced agriculture. This region consists mainly of faulted, dissected limestone, with some intrusive epipliolites bordered by gneisses and igneous rocks in the east.

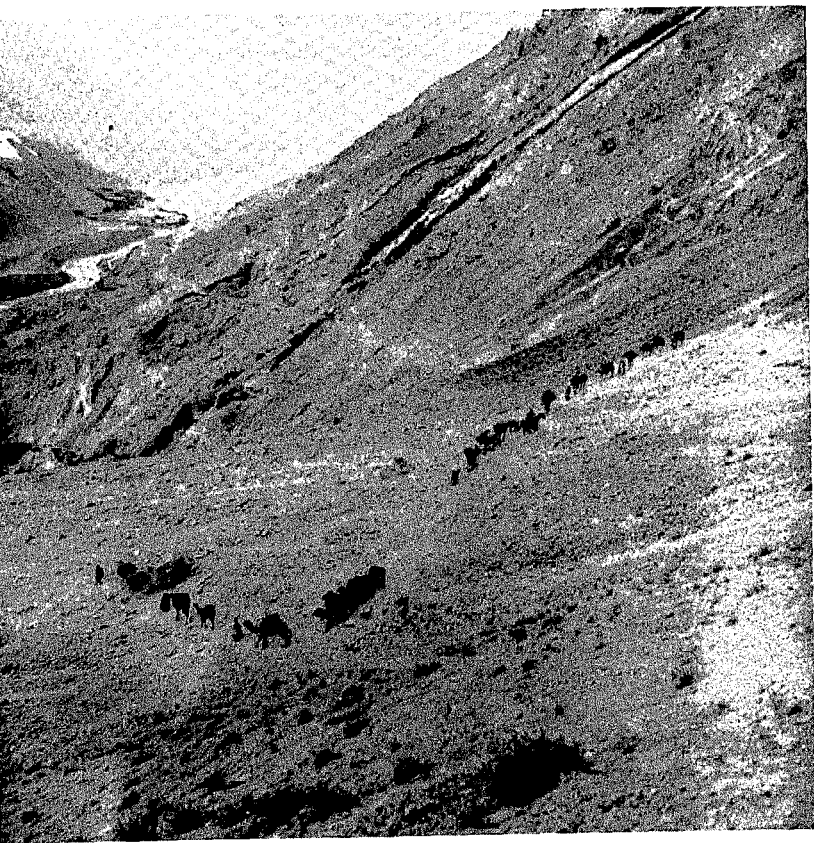
The Panjsher Valley serves as a major north-south route used by nomads summering in Badakhshan and wintering in the Laghman-Jalalabad area. Until 1961, many of these groups crossed the border into Pakistan to winter in the Peshawar Valley and points south.

The third major valley, *Ghorband*, lies in an east-west trend from Charikar to Shibar Pass. Here the sedimentary basin is flatter and with higher terraces than the Panjsher. Farther west, near Bulola, limestone, and near Bamiyan, sandstone and conglomerate, cliffs are encountered, but farther east, the formations become increasingly undifferentiated metamorphics.

Nuristan (formerly called Kafirstan), a region of wild, narrow mountain valleys, accessible only by foot trails except on the periphery where

¹ For more on geology: see Gannser (1964); Griesbach (1887); Wirtz (1964); Zeigler (1958). For geography, see *The Geographical Review of Afghanistan*, published since 1962 in Dari and Pashto with occasional articles in English as the semi-annual organ of the Institute of Geography, Faculty of Letters, Kabul University. Also see G. Arez (1970).

² For additional information on natural vegetation: *Afghanistan: B.I.S.* (1948); *Afghanistan: Field Notes* (1915); Furse (1956ab, 1966); P. and P. Furse (1968abc).



6. Eastern Mountains. Ghilzai Pushtun nomads near Anjuman Pass (Panjsher Valley) on way from Badakhshan to winter pasturage in Pakistan. Pakistan stopped such trans-border migrations in fall, 1961. October, 1950

new roads have been constructed, consists of five major north-south valleys (from east to west: Bashgal-Landai Sin-Kunar River complex; Waigal; Pech-Parun-Kantiwa; Alingar-Kulam; Darra-yi-Nur), and about thirty east-west lateral valleys leading into the major valleys. Nuristan is a complex country of gneisses, dioritic and granitic pegmatites, undifferentiated metamorphics, some Mesozoic limestone beds, slates, and recent deposits in the valleys. The five major north-south valleys (Bashgal, Waigal, Pech, Alingar, Alishang) support streams which swell the Kunar River as it flows southwesterly until it joins the Kabul River. Many passes lead into Nuristan from all directions.

In addition, Kotal-i-Unai, a relatively easy pass, leads from Kabul into the eastern Hazarajat. Several passes lead from Paktya into the Kurram Valley of Pakistan, through Parachinar to Thal.

Snow usually begins to fall in October, blocking most mountain passes for at least part of the winter. The permanent snow line varies between 10,000 and 12,000 feet (3,000 and 4,600 meters) above sea level. The winter snow line creeps down to about 6,000 feet (1,800 meters). Even in the summer, snow flurries occasionally occur at altitudes above 12,000 feet (3,600 meters). Snow fields and permanent glaciers breed unfavorable conditions in some areas above 14,000 feet (4,300 meters).

Blizzards dominate the winter months, and snow blocks most passes above 7,000 to 8,000 feet (2,100 to 2,400 meters). Systematically accurate snow depths are not available, but drifts of ten feet (three meters) and deeper have been reported. Winds accompanying winter storms reach gale proportions and continue to slice down the valleys, even when not transporting snow. Strong steady winds also occur in spring, summer, and autumn, especially in the higher altitudes, but are less fierce below 6,000 feet (1,800 meters). The local population knows all the seasonal winds and has names for the more vicious and more gentle ones.

In the spring (March-May), the snow melts and rushing streams become raging torrents. The winter months (December-March) are intensely cold and snowy in the Eastern Mountains, although much less snow falls in the main basins, such as Kabul, Kohistan, and Ghorband. Temperatures average around freezing but sometimes drop as low as 1°F. (-30°C.).

Spring temperatures increase tremendously (see Chart 1). Freezing weather is found in April in the highest passes, but below 7,000 feet (2,100 meters) temperatures are more comfortable, averaging 55° to

CHART I
Climatic Charts

Geographic Region and Province; Degrees centigrade	1965			1966								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
BADAKHSHAN												
Mean Max. Temp.	25.2	17.3	10.9	14.4	13.1	13.4	18.7	24.5	34.7	36.0	35.3	29.5
Mean Min. Temp.	8.4	3.9	-5.2	-2.2	2.6	2.9	6.1	9.4	13.7	15.5	15.0	8.8
Mean Temp.	16.0	9.6	2.0	4.9	7.4	7.6	12.1	17.2	25.3	27.7	26.1	20.0
Relative Humidity	X	X	X	X	X	X	X	X	X	X	X	X
Total Rainfall in mm	8.9	37.4	8.6	15.0	72.3	103.5	100.8	31.8	1.0	0.9	0	0
BAGHLAN (Northern Mountains and Foothills)												
Mean Max. Temp.	26.7	18.4	11.0	15.2	14.9	15.5	21.1	29.4	37.8	37.5	36.5	31.5
Mean Min. Temp.	9.4	4.0	4.8	-1.8	4.8	6.2	10.4	13.3	17.9	19.1	17.4	12.1
Mean Temp.	16.9	10.1	1.5	5.0	9.1	10.2	15.1	20.7	27.3	27.5	25.9	20.0
Relative Humidity	64	76	73	69	82	83	81	62	48	46	51	55
Total Rainfall in mm	2.5	6.0	14.0	Tr	54.4	126.0	68.9	8.1	0	0	0	Tr
BALKH (Turkestan Plains)												
Mean Max. Temp.	26.4	20.1	13.7	17.1	16.6	16.6	23.5	31.5	39.5	39.2	38.8	32.1
Mean Min. Temp.	X	6.0	-2.5	X	X	X	13.7	17.5	24.8	26.8	25.4	17.2
Mean Temp.	18.8	11.9	4.5	7.5	10.3	11.7	17.4	25.0	32.3	33.4	31.7	24.4
Relative Humidity	46	57	53	55	73	69	58	45	45	43	46	35
Total Rainfall in mm.	0	1.0	2.0	1.0	44.5	65.4	16.5	0	0	0.2	0	0
FARAH (Herat-Farah Lowlands)												
Mean Max. Temp.	32.7	24.7	17.9	20.5	19.6	24.1	31.8	36.4	42.9	42.7	40.2	36.2
Mean Min. Temp.	12.6	6.1	-0.6	1.1	7.1	8.0	15.0	17.6	25.2	23.6	20.1	15.3
Mean Temp.	20.3	13.8	7.4	9.5	12.5	15.5	23.5	27.7	34.0	32.8	30.5	25.1
Relative Humidity	45	62	60	63	71	50	57	50	40	45	42	47
Total Rainfall in mm	0	13.0	1.1	10.3	54.7	0	0	0	0	0	0	0
FARYAB (Turkestan Plains)												
Mean Max. Temp.	24.4	18.5	12.7	16.7	14.0	14.6	20.8	28.2	36.2	35.5	34.6	29.3
Mean Min. Temp.	8.8	5.5	-1.1	2.4	3.4	2.2	7.0	11.0	17.6	18.5	17.4	12.1
Mean Temp.	16.0	10.6	4.8	8.3	8.2	8.5	14.2	19.8	26.8	27.1	26.0	20.7
Relative Humidity	X	X	X	X	X	X	X	X	X	X	X	37
Total Rainfall in mm	5.2	14.0	21.4	1.5	49.8	93.7	39.8	0.3	0	0	0	0

Source: *The Kabul Times Annual*, 1967, 87-90.

CHART 1 (continued)

Geographic Region and Province; Degrees centigrade	1965			1966								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
GARDEZ (Southern Mountains and Foothills)												
Mean Max. Temp.	20.5	12.2	5.2	5.1	6.9	10.1	14.1	21.7	27.5	27.8	28.9	24.4
Mean Min. Temp.	4.1	-0.3	-9.5	-8.6	-1.2	-1.1	3.5	6.7	11.7	14.1	13.7	8.5
Mean Temp.	12.3	4.8	-4.0	-3.5	1.8	4.0	8.5	14.9	20.8	21.1	21.0	16.4
Relative Humidity	42	58	48	60	78	67	68	44	50	52	51	49
Total Rainfall in mm	0	15.9	18.6	11.5	94.9	77.6	65.4	10.6	6.1	8.3	0	0.1
GHAZNI (Southern Mountains and Foothills)												
Mean Max. Temp.	22.5	13.7	5.7	5.3	8.9	12.4	15.8	23.9	30.0	30.8	30.8	25.9
Mean Min. Temp.	2.8	-2.0	-10.1	-12.3	-4.7	-3.9	1.0	7.8	13.0	15.4	14.2	9.0
Mean Temp.	12.2	4.9	-3.4	-4.3	2.4	4.7	8.8	15.9	22.9	23.0	22.1	16.8
Relative Humidity	61	71	73	69	81	68	70	55	53	59	56	52
Total Rainfall in mm	0	36.4	52.0	16.4	105.5	26.3	94.2	7.2	1.2	1.1	0	0
GHELMIN (Central Mountains)												
Mean Max. Temp.	22.1	14.4	6.5	7.7	9.4	-	15.7	22.3	28.2	28.6	28.3	24.1
Mean Min. Temp.	13	-3.4	-12.2	-10.8	-1.6	-	2.8	4.9	7.8	9.1	7.3	2.8
Mean Temp.	10.3	4.4	-5.2	-3.2	2.7	-	8.2	12.9	18.5	19.7	18.2	13.0
Relative Humidity	60	71	65	66	78	-	65	44	34	47	51	61
Total Rainfall in mm	0	8.5	14.7	Tr	39.6	-	94.0	2.8	0	0	0	0.1
GHOR (Central Mountains)												
Mean Max. Temp.	16.1	8.6	2.7	-1.5	3.0	4.3	8.7	16.7	24.0	24.9	24.4	20.0
Mean Min. Temp.	-3.2	-7.1	-15.8	-20.2	-8.7	-7.5	-1.8	0.1	3.4	4.5	2.6	-2.6
Mean Temp.	5.8	-0.5	-8.4	-12.2	-3.2	-2.4	3.2	8.7	14.9	15.9	14.9	9.4
Relative Humidity	60	67	62	71	82	76	82	64	62	60	49	52
Total Rainfall in mm	0	13.6	18.4	11.6	42.0	71.9	93.7	2.8	0	0	0	Tr
HILMAND (Sistan Basin- Hilmand Valley)												
Mean Max. Temp.	33.2	24.3	16.6	19.2	19.8	24.7	29.2	36.4	42.4	41.5	37.5	34.1
Mean Min. Temp.	12.7	6.5	-0.9	1.3	7.1	8.2	12.6	17.5	21.8	23.5	17.4	15.1
Mean Temp.	21.8	14.1	6.1	8.3	12.5	15.4	20.5	27.4	32.2	31.7	26.6	24.1
Relative Humidity	33	46	53	53	64	36	39	37	31	27	25	4
Total Rainfall in mm	0	10.2	13.5	0.7	41.0	0.4	1.9	0	0	0	0	0

CHART 1 (continued)

Geographic Region and Province; Degrees centigrade	1965			1966								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
HERAT (Herat-Farah Lowlands)												
Mean Max. Temp.	27.5	20.2	13.1	16.4	14.3	18.3	22.2	29.0	34.5	35.7	34.9	30.8
Mean Min. Temp.	10.0	3.9	-3.5	0.4	4.1	3.9	8.7	12.8	19.9	21.6	19.3	13.4
Mean Temp.	19.7	11.4	3.5	7.1	8.2	10.4	14.8	20.8	28.4	29.1	27.6	22.0
Relative Humidity	51	61	70	66	75	50	55	36	34	33	38	38
Total Rainfall in mm	0	7.8	13.8	21.6	73.8	27.6	100.8	0	0	0	0	0
JOWZJAN (Turkestan Plains)												
Mean Max. Temp.	25.3	19.1	12.5	15.2	14.8	16.0	23.2	31.2	38.4	36.9	37.0	31.2
Mean Min. Temp.	11.8	6.8	-0.1	3.0	5.5	6.6	10.8	14.5	21.2	22.1	20.7	15.8
Mean Temp.	18.2	12.3	5.9	8.3	9.8	11.4	16.6	23.1	29.5	30.1	28.9	23.7
Relative Humidity	44	61	69	61	71	66	59	33	32	36	29	24
Total Rainfall in mm	1.3	11.0	14.8	8.0	54.5	45.0	24.3	0	0	0	0	0
KABUL (Eastern Mountains and Foothills)												
Mean Max. Temp.	24.3	15.7	7.7	9.1	10.5	12.6	17.0	25.0	32.1	31.9	31.8	27.3
Mean Min. Temp.	4.9	-0.4	-8.3	-6.4	-0.7	-0.5	4.3	7.4	12.4	15.0	14.8	8.4
Mean Temp.	14.4	6.7	-2.7	-0.3	4.2	6.1	11.0	17.0	23.1	24.6	23.9	18.7
Relative Humidity	52	65	67	72	76	72	76	51	29	34	25	41
Total Rainfall in mm	0	40.0	6.2	13.1	83.4	79.7	70.8	11.9	0	3.5	6.8	3.0
QANDAHAR (Southern Mountains and Foothills)												
Mean Max. Temp.	31.4	22.9	15.4	18.5	18.9	22.7	26.9	34.8	40.3	39.9	38.5	34.1
Mean Min. Temp.	11.6	5.8	0.7	1.5	6.6	6.9	12.1	15.6	20.6	22.7	19.3	14.0
Mean Temp.	20.0	12.7	5.3	7.4	11.6	14.0	18.5	25.5	31.2	31.5	28.6	23.2
Relative Humidity	26	49	45	49	67	46	52	26	22	25	21	19
Total Rainfall in mm	0	8.8	44.2	3.1	76.5	11.6	27.4	0	0	0	0	0
KUNDUZ (Turkestan Plains)												
Mean Max. Temp.	26.0	18.7	11.0	15.4	15.4	15.7	21.8	30.6	39.0	38.9	37.2	31.1
Mean Min. Temp.	12.7	6.3	-2.8	0.9	5.7	6.5	10.9	15.2	23.0	24.0	22.8	16.3
Mean Temp.	18.8	11.8	3.4	7.3	10.2	10.7	16.1	23.0	31.3	31.5	29.8	23.4
Relative Humidity	60	74	64	61	77	80	72	51	X	38	39	42
Total Rainfall in mm	1.6	14.8	11.8	3.0	49.2	118.5	32.5	1.7	0	0	0	0

CHART 1 (continued)

Geographic Region and Province; Degrees centigrade	1965			1966								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
LAGHMAN (Eastern Mountains)												
Mean Max. Temp.	30.1	22.6	16.3	18.0	18.0	18.9	23.6	32.7	38.7	36.3	37.6	31.8
Mean Min. Temp.	13.0	7.3	-0.9	1.1	7.1	7.7	11.5	15.6	22.5	24.2	24.4	17.7
Mean Temp.	21.4	14.1	6.4	8.4	12.4	13.1	17.8	25.4	31.4	30.5	29.9	25.2
Relative Humidity	X	X	66	X	X	X	X	X	X	X	X	58
Total Rainfall in mm	12.2	24.1	20.4	0.7	65.7	142.6	62.5	5.8	Tr	Tr	0	0
NINGRAHAR (Eastern Mountains)												
Mean Max. Temp.	32.3	23.9	16.4	X	18.9	20.7	25.3	35.8	41.2	39.4	38.5	34.2
Mean Min. Temp.	15.7	9.6	0.6	2.2	8.8	9.9	13.8	20.0	26.8	26.4	26.7	20.6
Mean Temp.	23.3	15.2	7.1	8.6	13.4	14.2	19.1	28.4	34.1	32.2	32.0	20.4
Relative Humidity	47	60	67	58	70	67	64	31	30	49	47	53
Total Rainfall in mm	0	37.5	11.7	Tr	36.4	105.3	41.8	4.0	0	0	0	5.3
PAKTYA (Southern Mountains and Foothills)												
Mean Max. Temp.	27.7	20.5	14.4	16.4	15.4	18.1	21.9	30.9	34.7	32.5	32.0	28.8
Mean Min. Temp.	12.2	5.6	-1.5	0.6	4.9	6.1	9.7	14.5	20.9	21.3	20.7	16.5
Mean Temp.	19.6	12.2	5.0	6.0	9.5	11.4	15.4	23.2	28.2	26.1	25.9	22.2
Relative Humidity	50	63	55	53	74	70	71	42	44	63	67	59
Total Rainfall in mm	0	38.8	33.6	Tr	75.6	68.0	51.1	41.8	47.9	143.4	55.1	88.1
PARWAN (Eastern Mountains)												
Mean Max. Temp.	24.1	16.0	8.3	8.6	11.1	13.5	17.3	24.0	30.2	31.3	31.5	26.8
Mean Min. Temp.	14.7	7.2	-2.3	-0.5	4.2	5.4	9.3	15.2	21.9	22.8	22.2	17.7
Mean Temp.	18.8	11.5	2.2	3.0	7.4	8.7	13.0	19.8	26.3	26.7	26.4	21.5
Relative Humidity	32	44	44	63	59	53	53	30	24	23	21	23
Total Rainfall in mm	Tr	13.1	66.2	6.0	122.3	159.1	91.1	1.7	0	Tr	Tr	9.0
SALANG (Central Mountains)												
Mean Max. Temp.	6.5	1.0	-3.5	-2.1	-2.8	-2.1	2.6	6.3	12.9	13.5	13.3	9.4
Mean Min. Temp.	0.9	-7.0	-11.5	-10.8	-9.5	-10.0	-6.5	-2.2	3.8	5.0	4.4	0.1
Mean Temp.	2.3	-3.3	-7.7	-6.4	-5.7	-6.0	-1.9	1.8	8.0	8.8	8.5	3.9
Relative Humidity	86	80	47	48	72	72	72	72	67	63	66	70
Total Rainfall in mm	25.1	98.2	48.9	24.6	309.2	326.4	227.9	92.8	0	8.8	0.9	16.2

65°F. (13° to 18°C.) at noon. Actually, the high, dry, sunny climatic face of Afghanistan is more often comfortable than not in habitation areas. May is seasonally warm up to heights of 11,000 feet (3,350 meters), though the temperature fluctuates and freezing weather does occur.

Summers are relatively warm and comfortable. Autumn (October–November) brings intense cold to heights above 6,000 feet (1,800 meters). Snow filters down on the northern slopes, while the southern slopes still have warm (55°F., or 13°C.) days. Changes in altitude as well as season produce great temperature differences. A descent from 11,000 feet (3,350 meters) to 5,000 feet (1,520 meters) can involve a 70° to 80°F. (21° to 26°C.) change in a few hours. High in the permanent snow fields and glaciers, day temperatures can be warm (up to 65°F., or 18°C.) if no winds blow. The wind-chill factor becomes important as altitude increases.

Even when there is no snow lying, persons unaccustomed to high-altitude glare require sunglasses. Caravanners consider western-style sunglasses as prestige items. Many, however, still utilize homemade types similar to those made by the Eskimo: a strip of leather or wood with thin slits cut to limit the amount of sunlight striking the eye. In addition, the epicanthic eyefold of the Central Asian Mongoloid serves as a natural biological adaptation to protect the eye against snow and sun glare.

Nuristan and Paktya are the most heavily forested areas in Afghanistan. The Panjsher Valley, as historical references attest (Le Strange, 1930, 350), had large forests until they were destroyed by the greedy hand of man, who cut down and burned trees to smelt silver, copper, and other ores during the heyday of the early Islamic period before the thirteenth-century Mongol invasions. Man remained, but the forests never returned.

Modern vegetation patterns in the Eastern Mountains consist mainly of thin grasses and stunted bushes. Actually, about 40 percent of all Afghanistan is covered with sparse greenery. Chart 2 gives a general picture of the vegetation by altitude in the Central Mountains, Eastern Mountains, and Southern Mountains and Foothills.

There is a geographic anomaly, the so-called Reg-i-Rawan, an area of sand dunes, near Begram, just south of Charikar.

Southern Mountains and Foothills: This region is formed as the river systems of the Kabul and Hilmand debouch into the plains, and semi-

CHART 2
 Natural Vegetation
*Central Mountains, Eastern Mountains, Southern Mountains
 and Foothills*

<i>Altitude</i>	<i>Characteristics</i>
Above 14,000 feet	None
12-14,000 feet	Mountain meadows of short grasses and seasonally flowering plants.
10-12,000 feet	Mountain scrub, grasses and seasonally flowering plants, small scattered bushes (juniper, dwarf willow, rosebay, tragacanth, euphorbia).
Up to 10,000 feet	Dry scrub, semidesert bushy plants (feather grass, wormwood, saltwort, tragacanth, camel grass, tamarisk) and scattered clumps of pistachio trees.
Forest zones of Nuristan and Paktya: ^a 8 or 9,000 feet to 10-11,000 feet	Conifer forests of pine, cedar, fir, larch and yew with a few broadleaved trees (willow, poplar); ivy found only in Nuristan.
4,500-5,000 feet to 8-9,000 feet	Bushes and broadleaved forests of oak (including holly oak) with well developed undergrowth, and some walnut, alder, ash, juniper; above 5-6,000 feet, conifers included to form mixed forests.
Jalalabad region ^a : up to 4-5,000 feet	Subtropical scrub and flowering plants and shrubs, including some palm trees especially around Jalalabad town.
Valley floors and river banks	Plane trees, poplar, willow and mulberry thickets; much bush growth where land not cultivated.

^a Distinctive floral zones. Chart highly schematic. Because of the varied terrain within each zone, many local variations occur.

desert becomes desert, with agricultural villages studding the "tooth-paste squeezes" of the rivers and tributaries. The area mainly embraces Qandahar, Ghazni, and much of Paktya.

Northern Mountains and Foothills: A broad zone of mountain plateaux and foothills north of the Hindu Kush watershed stretches from the 70°E. meridian west to the Iranian border. Low, bare limestone, shale, and sandstone mountains with rounded summits dominate. Soils are usually thin and stony, except on lower, recent flood-plains with silt, clay, and loess deposits. In winter and spring these soils turn into deep muds.

The Band-i-Turkestan Range rises south of Maimana to heights of 11,000 feet (3,350 meters), and runs almost due east-west for about 125 miles (200 kilometers). The northern slopes drop abruptly onto the Turkestan Plains. In the foothills a loessy-sand called *chol* covers the bare rock.

South of the Band-i-Turkestan Mountains lies the Murghab River valley, a rolling limestone region parallel to the mountains, and never more than six to eight miles wide.

To the east the Paropamisus (plus Koh-i-Changar and Firozkoh) Mountains cut off Afghan Turkestan from the high valleys of the Central Mountains, and are the northern extremity of the main watershed complex. The region, characterized by deep valleys and rounded summits, consists mainly of barren scarps of metamorphic rock with peaks up to 11,500 feet (3,500 meters).

East of the Firozkoh lie the Kunduz, Andarab, and Surkh Ab valleys, which vary from narrow gorges to broad flat-bottomed valleys. The Andarab Valley pushes east toward Doshi. Between Doab and Bulola, the Surkh Ab Valley moves through a series of narrow gorges. Above Bulola, the valley divides: Shibar Pass lies to the east, and Bamiyan, Nil Kotal, and Aq Ribat to the west.

For a schematic representation of the vegetation by altitude in the Northern Mountains and Foothills and the Turkestan Plains see Chart 3.

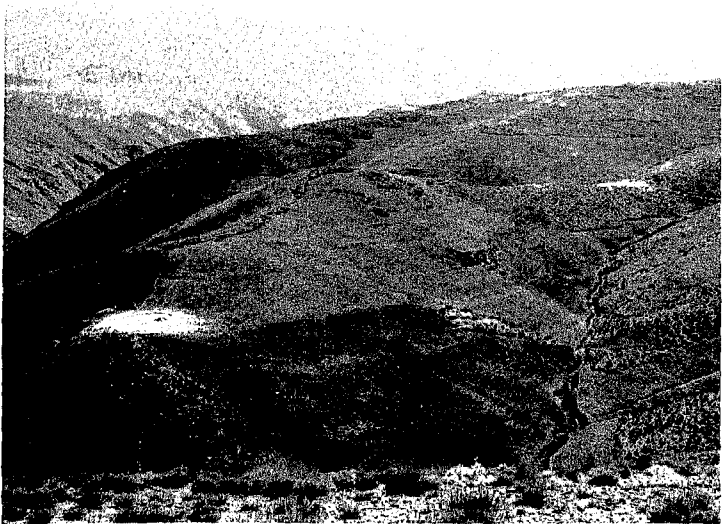
Turkestan Plains: The northern foothills abruptly drop from 4,000 to 6,000 feet (1,220 to 1,830 meters) into stony plains about 1,200 feet (370 meters) above sea level.

The elevation drops less than 1,000 feet (305 meters) in 50 miles (80 kilometers). Scattered dunes sometimes occur in the pebbly deserts and conversely. Sand drifts and dunes begin near Andkhui less than

CHART 3
Natural Vegetation
Northern Mountains and Foothills, and Turkestan Plains

<i>Altitude</i>	<i>Characteristics</i>
Above 13,000 feet	None
11,500-13,000 feet	Mountain meadows with short grasses and flowering plants.
8-10,000/11,500 feet	Mountain scrub of short grasses, flowering plants, and small bushes (tragacanth, milk vetch, <i>Astragalus</i> sp., euphorbia).
6-8,000 feet (west); 6-10,000 feet (east)	Scrub of scattered trees, grasses, flowering plants, small bushes in clusters. Oaks and conifers (including junipers); at higher levels willows and poplars, plus maple and hazel to the east.
3-3,500 to 6-6,500 feet	Scrub of grasses, small bushes, and pistachio trees. ^a
Up to 3-3,500 feet	Meadows of reeds and grasses with occasional pistachio trees.
Valley floors and river banks	Camel thorn (grass), plane trees, poplars, willows, mulberry trees where there is cultivation. Reeds along the Amu Darya.

^a Pistachio trees common all over northern Afghanistan; usually about 10 feet high, diameter 4-6 inches; staggered about 15-25 feet apart, and, although wild, have appearance of cultivated orchard. Chart is highly schematic. Because of the varied terrain within each zone, many local variations occur.



7. Central Mountains. *a*) Hazarajat: *lalmi* (dry cultivated) wheat on loess-covered hillsides. November, 1961. *b*) Threshing area for *lalmi* wheat near Jam. October, 1961

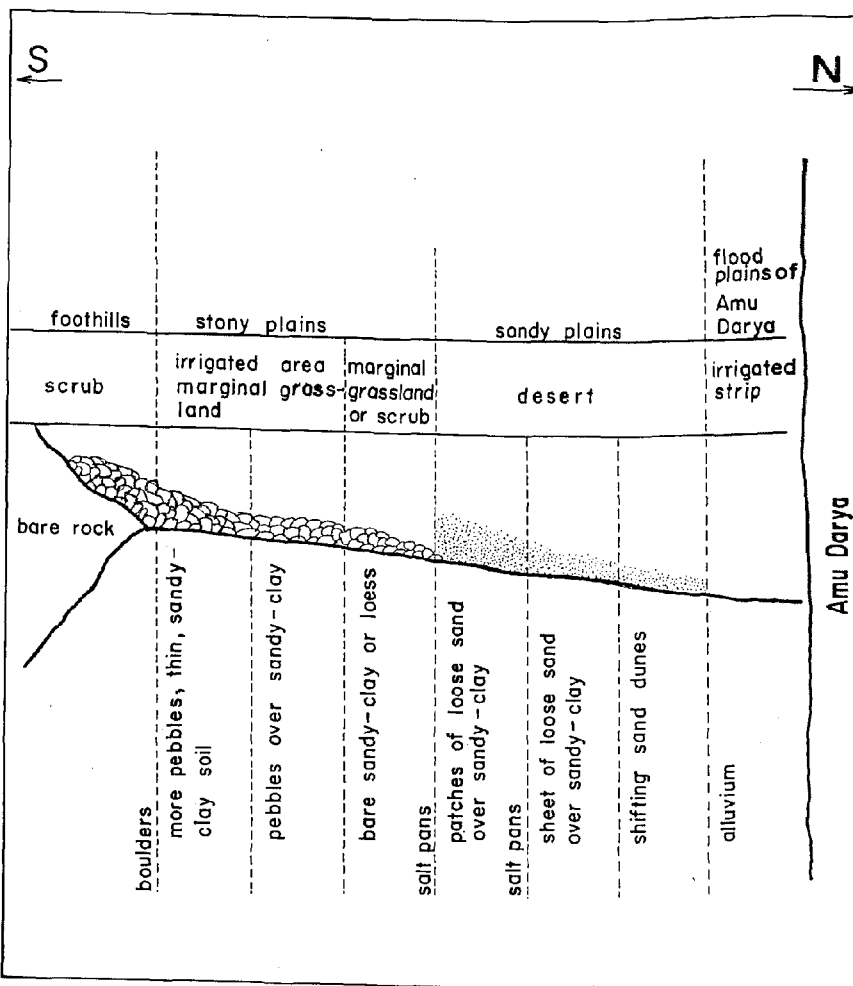


DIAGRAM 1
Turkestan Plains: Idealized Cross-Section of Topography

20 miles or (32 kilometers) from the Amu Darya. To the east, near Khist Tapa, the sand pinches out about 2 miles (3.2 kilometers) from the Soviet border. The long, shifting dunes reach heights of 30 feet (9 meters). Almost level, the floodplain of the Amu Darya varies from 2 to 10 miles (3.2 to 16 kilometers) in width. Marshy, alluvial terraces, 10 to 20 feet (3 to 6 meters) high, often separate the floodplain from the desert. West of Termez, U.S.S.R., a number of islands dot the river. North of Tashkurghan and southwest of Andkhui sit expanses of salt flats which become wet marshes in winter, but dry, crusty zones in summer.

Much variability in temperature occurs in winter (December–February) (Chart 1). A series of warm days (60° to 70°F., or 15° to 21°C.) gives way to a three- to four-week period of freezing weather.

Spring (March–May) exhibits great climatic variability. March and April temperatures often drop to freezing, and maximum readings for two consecutive days in May may vary as much as 50°F. (28°C.). Snow, sleet, and cold rain fall, but the snow seldom sticks. Throughout the spring, average temperatures increase gradually. Daytime temperatures sometimes exceed 80°F. (26°C.) in March, 90°F. (32°C.) in April, 100°F. (37°C.) in May.

Diurnal summer (June–September, the least variable of the seasons) temperatures still fluctuate greatly. Day temperatures often reach 105°F. (40°C.), with nights much colder. However, by the middle of September, nighttime freezing temperatures commonly occur.

Autumn (October–November), like spring, exhibits variable temperatures, and a shift from hot to freezing weather can strike abruptly.

Rain falls sporadically in autumn and winter, but most falls in spring as thundershowers, increasing the danger of floods. Disastrous floods sometimes result as snow melts in the mountains south of the plains during April and May. The average annual precipitation in the Turkestan Plains seldom reaches 10 inches (25.4 centimeters), however.

In late summer and early autumn soft winds from the north shift rich loess to the plains and foothills of north Afghanistan, permitting extensive highland agriculture. For centuries, this unscheduled aid program has been annually giving Afghanistan tons of top soil from the Russian Central Asian steppes. The loess often seems to hang in the air, and penetrates everything, skin and clothing, with an almost oily consistency, and sometimes even blocks out the sun in the afternoon. Such wind-blown, natural phenomena, however, cause grasslands to flourish into

farmlands and into seasonal flowering grasses to feed the flocks of the nomads.

Herat-Farah Lowlands: Actually an extension of the Khurasan Region of the Iranian Plateau, the Herat-Farah complex consists mainly of mountain ranges and low hills, sporadically rugged but generally rounded, separated by broad, flat valleys. The area is approximately enclosed by the Hari Rud to the north, the Khash Rud to the south, and the Central Mountains to the east.

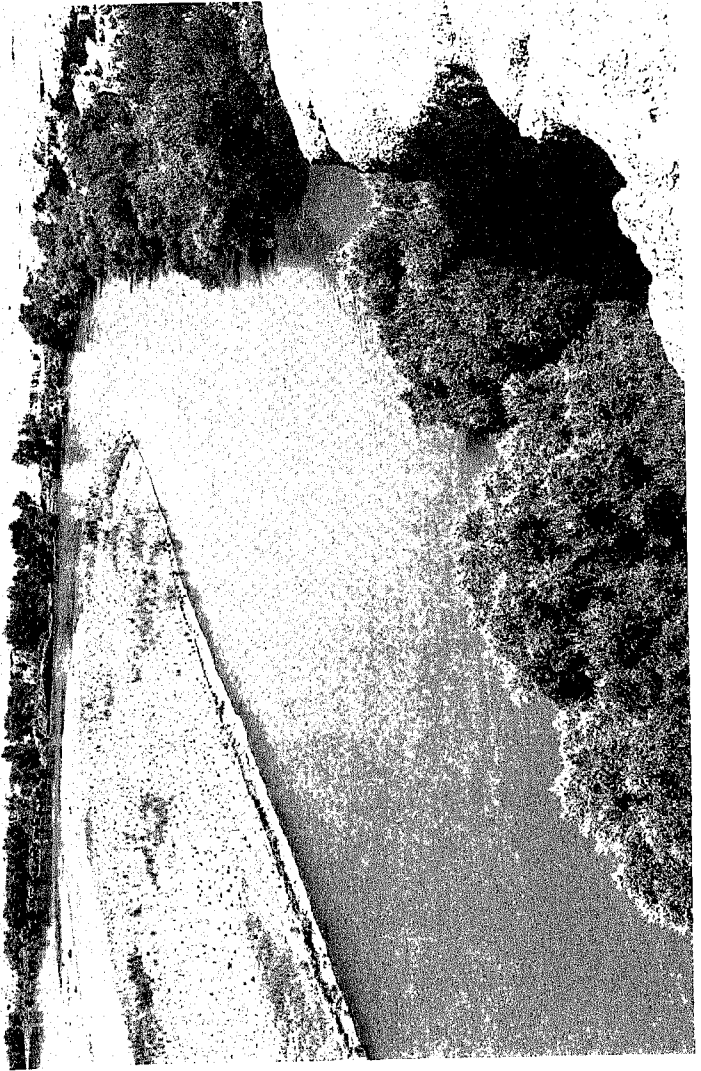
The region is intensively cultivated where water is available.

The low hills near Herat are crystalline rocks and undifferentiated metamorphics of the Upper Palaeozoic, with Mesozoic limestones and shales north of the Hari Rud. Mesozoic limestones and shales, Tertiary sandstones, clastics, and basic to intermediate volcanic intrusions and extrusions abound in the south. Desert basins of sandy clay covered with loose gravels and pebbles surround the hills. Near the Irano-Afghan boundary exist a number of salt- and mudflats, more extensive than those of the Turkestan Plains.

Winter (December-February) finds freezing temperatures common at night. Warm spells do occur, however, and temperatures above 70°F. (21°C.) have been reported for December-January, and 80°F. (26°C.) in February. Spring (March-May), more variable than winter, has some freezing temperatures in March, but the average gradually increases to about 70°F. (21°C.) in May. Day temperatures in the hot, dry summer (June-September) sometimes reach 120°F. (45°C.). A June midnight temperature of 120°F. (45°C.) has been recorded at Farah. In September, a noticeable decrease in temperature occurs, and nights become chilly and even cold, although the days remain relatively warm. Transitional autumn (October-November) has decreasingly warmer days and increasingly colder nights, especially in the Herat area.

Annual precipitation averages 7 inches (18 centimeters) in Herat. Both snow and rain fall in the Herat area during winter, but snow melts and seldom remains on the ground for long. Although less rain falls in the spring, rivers swollen with melt-water often cause floods as early as February and climax in April. Summer thunderstorms and flash rains occur, but autumn is almost rainless.

Hilmand Valley-Sistan Basin: Most of the low lying (average elevation about 1,700 feet, or 520 meters) Sistan Basin lies in Iran. The



8. Hilman Valley. Tamarisk jungle to right. Stony desert in background. September, 1961

eastern boundary of the Sistan Basin penetrates the edge of the Dasht-i-Margo ("Desert of Death") along a sharp scarp with the height varying from 30 feet (9 meters) to several hundred feet. The Sistan Basin, a zone of intermittent lakes, fresh water and brackish marshes interspersed between stony and sandy deserts, forms a part of the great inland Hilmand drainage basin. The river flows into the Hamun-i-Hilmand, a series of marshes and connecting lakes. Fresh water overflows from the Hamun, and empties into the Gaud-i-Zirreh, an ephemeral brackish lake.

Level, fertile plains, the ancient beds of extinct lakes, surround the modern lakes. A number of volcanoes erupted in the early Pleistocene, covering much of the bottom with lava flows and caps. In well-exposed vertical sections, several layers of Neogene and Pleistocene sediments can be differentiated. Reddish and greenish clays alternate, interspersed with bands of gravels and sands. Gravel deposits and fine silts overlay the clays.

Spring floods often cover wide areas, and the uncontrolled Hilmand flushes downstream from the mountains. But the huge dams at Kajakai on the Hilmand and Dahla on the Arghandab have helped gain moderate control since the mid-1950s.

Tamarisk bushes grow in abundance along sections of the Hilmand flood plain not utilized for agriculture. The Afghans call such tamarisk groves, where wild boar still thrive, *jangal* (jungle).

The vicious *bad-i-sad-o-bist-roz* ("wind of 120 days"), a seasonal natural phenomenon, emphasizes the inhospitability of southwestern Afghanistan. Born of the differential pressures between the northern plains and the southern and southwestern lowland deserts, and blocked by the Central Mountains of Afghanistan and the Elburz of Iran, the winds whip down the natural corridor along the Irano-Afghan border, stirring up violent sandstorms from Herat to Pakistani Baluchistan. Velocities vary from day to day and week to week, but sometimes exceed 100 knots. Beginning in July, the winds gradually increase and blow through September.

Other strong, cold winds push out of the high-pressure areas south of Central Asia and the Turkestan Plains in autumn, winter, and spring, but seldom with the force of the *bad-i-sad-o-bist-roz*.

Another phenomenon of the lowlands of Afghanistan, both north and south, is the *khakbad* ("dust wind"), or small whirlwind of sand. At times, tens of these miniature tornados can be seen swaying across desert and semi-desert areas.



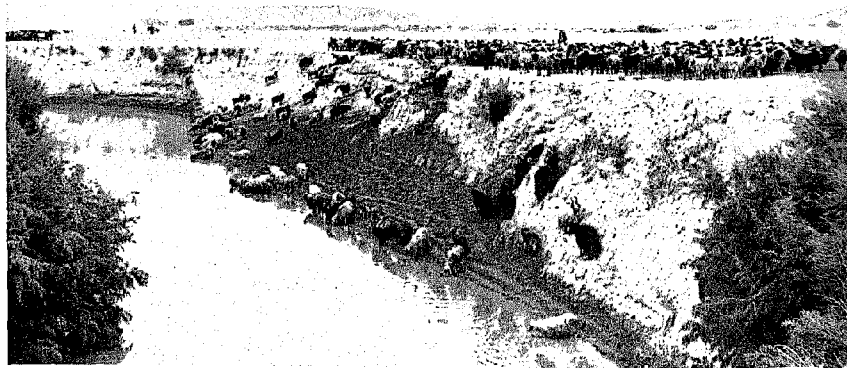
9. Western stony desert of Dasht-i-Margo, north of Hilmand River. August, 1949



10. Southwestern sandy deserts. Northern sector of Registan.



11. Northern Mountains and Foothills. Valley of Gurziwan south of Maimana. Camels of nomads grazing on freshly-reaped wheat stubble. August, 1970



12. Turkestan Plains. Ghilzai Pushtun nomads in winter pasturage near Andkhui. November, 1959

Western Stony Deserts: Mainly uninhabited and relatively unexplored, the Dasht-i-Kash, Dasht-i-Margo, and adjacent areas are hot, waterless, barren, varnished-pebble-strewn deserts, which (like the Southwestern Sandy Deserts) seldom rise over 3,000 feet (915 meters) above sea level, usually ranging between 1 and 3,000 feet (305–915 meters). Scattered lenses of volcanic ash a few inches thick alternate with volcanic lavas in the region. Spring flash floods cut deep depressions in the sandy clay and silt underlying the heavily cemented, blackish wind-polished basaltic pebbles. Seasonal overflow from the Hilmand creates shallow ponds throughout the fringes of the desert.

Great diurnal changes of temperature occur, and water sometimes freezes at night in summer in spite of noon maxima of 120°F. (45°C.), or higher.

Limited flora and fauna can survive in either the Sistan Basin, Western Stony Deserts, or Southwestern Sandy Deserts. Desert plants are xerophytic and adapt to extremes of aridity and salinity. Only thorny, deep-rooted plants exist perennially. The commonest and most widespread is camel grass or thorn, a member of the pea family, which is greenish-gray in color. Camel grass exudes a combustible sap which hardens on contact with the air and can be used as an emergency food. Some such *manna* must have assisted the Israelites in their trek through Sinai to Canaan. Camel grass itself can be used to quick-broil small animals and birds, for it burns rapidly at a very high temperature.

Southwestern Sandy Deserts: South and east of the Hilmand River lies Registan, the "Land of Sand," an area of shifting sand dunes with an underlying pebble-conglomerate floor. The moving dunes reach heights of between 50 and 100 feet (15 and 30 meters). However, some fixed dunes exist in central Registan. Level areas between the dunes, called *pat* (which also means desert in Baluchi) menace travelers. Treacherous, sandy-clay mush when wet, *pat* becomes a hard-topped pan when dry, but remains mushy underneath.

The Hilmand system to the north and west, the Chaman–Qandahar road to the east, and the Chagai Hills of Pakistan to the south enclose the sandy deserts.