

**HELMAND-ARGHANDAB VALLEY**

*Yesterday, Today, Tomorrow*

**by**

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**Lashkar Gah, Afghanistan**

**1969**

UNITED STATES OF AMERICA  
AGENCY FOR INTERNATIONAL DEVELOPMENT

KABUL, AFGHANISTAN

هيئة انكشاف بين المللى اضلاع محده امرىكا  
كابول افغانستان

OFFICE OF THE DIRECTOR

دفتر رئيس

FOREWORD

This pamphlet entitled The Helmand-Arghandab Valley YESTERDAY, TODAY, TOMORROW fills a long-existing need for a brief history of the Valley and prospects for future development. It is not a technical book, nor is it an exhaustive treatment of all that has transpired in the Valley over the last thousand years, or even over the last ten years. It is rather an historical sketch of the past, of the present situation, and of the future potential of the Valley.

It was Dr. Raymond T. Moyer, Assistant Director of the Helmand-Arghandab Valley Region, USAID/A, from March 1967 to March 1968, who first conceived the idea of producing this historical sketch. Dr. Moyer then persuaded Mrs. Mildred Caudill, wife of Mr. Sanford Caudill of the Bureau of Reclamation group working in the Valley, to do the research and writing that produced this volume. The text has been reviewed by His Excellency Governor Mohammed Hashim Safi, General President of the Helmand-Arghandab Valley Authority, Royal Government of Afghanistan, and his principal officers in the HAVA, by Mr. Elonzo B. Grantham, Jr., Assistant Director, Helmand-Arghandab Valley Region, USAID/A, by Dr. William A. Wolffer, Deputy Director, USAID/A, and by myself.

The research, writing, reviewing, and revision have taken over a year, and I believe the result is well worth the considerable efforts of all who have contributed.

By far the greatest credit goes to Mrs. Caudill who did most of the research, all of the writing, and many of the revisions which resulted in the present text. I especially appreciate the fact that she did all of her work without any compensation other than the personal satisfaction of doing well something that needed to be done. Mrs. Caudill deserves the highest commendation for her perceptivity, her diligence, and her writing skill.



Russell S. McClure  
Director

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## I. An Introduction to Regional Development in the Helmand-Arghandab Valley

Continuing efforts by the Helmand-Arghandab Valley Authority of the Royal Government of Afghanistan to rehabilitate ancient irrigated areas and modernize the Valley's agriculture hold encouraging promise.

The long range program will ultimately develop a gross irrigated area estimated at 363,000 acres. This includes land of varying classification and quality in most regions now receiving a full or partial water supply.

Approximately 300,000 of these acres lie within the Upper Helmand and Arghandab regions. Attention will center here during the years immediately ahead.

In general nature and potential the Helmand-Arghandab Project corresponds to the Salt River Project in Arizona.

Plans for constructing drainage facilities, leveling land and restoring soil fertility are being formulated and are projects of high priority. The goal is full utilization of available water and land resources.

Such a monumental task, requiring continuing work over a period of years, will involve extensive effort, patience and large additional financing before completion and attainment of goals.

Land development in the Helmand Valley, which has been proceeding at a slower rate than originally contemplated, is now gaining momentum. Feasibility studies have been completed in some areas and are continuing in others. The problems of salinization of soil, waterlogging and low crop yields are being studied. Agricultural development is being accelerated and work is under way to improve and expand the supply of electric power.



## II. Afghanistan ... A Part of its Past

The nation of Afghanistan as it is known today was founded in the eighteenth century, less than 30 years before the United States of America were declared independent. However, history was being recorded in this Asian country long before the discovery of America and the new world.

Ancient documents narrating events of 5,000 years ago mention Afghanistan, which was then known as Aryana, a name taken from migrating Aryan tribes of central Asia. In writings of the seventh century A.D., when the teachings of Islam were becoming known, the country was called Khorasan. This is translated "land from which the sun rises."

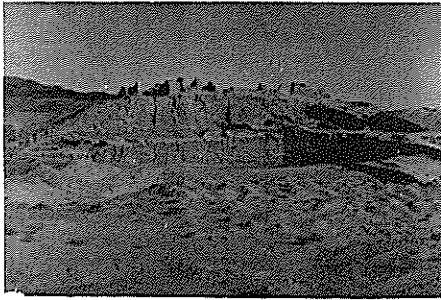
Because of its geographical position between Iran and India on the overland trade routes, Afghanistan inevitably became the pathway and objective for military attacks by world conquerors. History tells of centuries when a pattern of invasion and conquest, destruction and restoration was repeated again and again.

Only when archaeologists have classified and evaluated the remains of long buried cities and cultures will the full story of this south Asian area be assembled and the continuity of civilization be established. Many unexcavated sites tempt the scholar and stir the imagination of the curious. Their contents perhaps will shed light on the dim, unknown past and answer many questions of the present.

In the Helmand-Arghandab Valley artifacts have been discovered from a highly developed civilization existing thousands of years ago. Mounds at Mundigak, a prehistoric city in Kandahar province, were found to contain 13 layers rising to a height of 97 feet.

A missing link in early history was supplied when a stone slab of the third century B.C. was found in the Arghandab basin in 1958. It bears an edict of the Indian Emperor Ashoka relating to Buddhist practice during his reign. Modern historians accept this as evidence supporting their belief that the Indian kingdom of that date included portions of Aryana and that Buddhism was once the religion of the Arghandab Valley.

MASSIVE CRUMBLING WALLS which line many miles of the river south of Lashkar Gah are today mute reminders of the glories of the winter capital of the Ghaznavids.

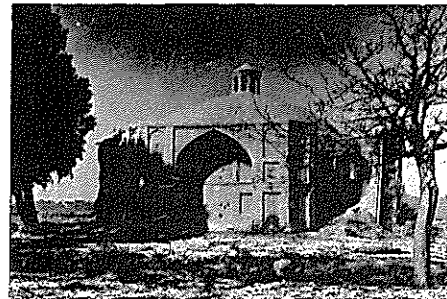


MOUNDS AT MUNDIGAK, a prehistoric city in Kandahar province.

The City of Kandahar, second population center of present Afghanistan, figures prominently in both the ancient and modern history of the country. Ruins of a city, predating the present one, lie a short distance to the south. Known in earliest times as Arachosia, it had been a province of both Iran and India and probably was destroyed and rebuilt several times before the coming of Alexander the Great.

In 328 B.C. it became the third namesake city founded in Aryana by this famous conqueror of the Asian continent and was known as Alexandria-in-Arachosia. In contrast to other parts of the valley, Kandahar and its rich agricultural area escaped complete destruction by later invasions and the country has been continuously cultivated over a long period of time.

It was at Kandahar in 1747 that Ahmad Khan was chosen from among the tribal leaders of Afghanistan to rule the independent nation they wished to establish. The ceremony of this date, in which a holy man proclaimed choice of the new Shah by holding over his head a few stalks of unthreshed wheat, has become symbolic. The national flag of Afghanistan today bears this emblem - a sheaf of grain.



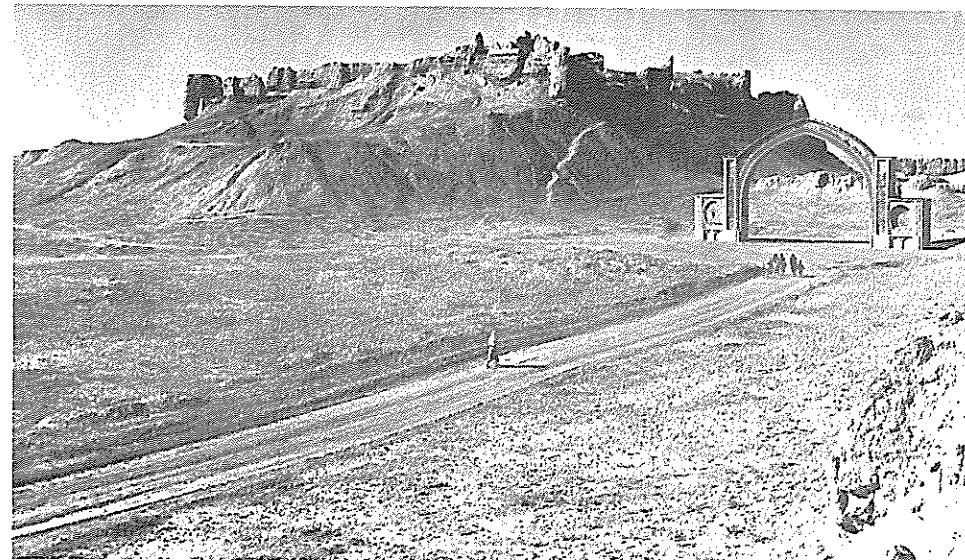
IN THIS BUILDING IN 1747 tribal leaders of Afghanistan chose Ahmad Khan to rule the independent nation they wished to establish.

The climate of the Helmand Valley seems responsible for the position that Lashkar Gah was destined to hold in the history of the tenth century A.D.

During the reign of Sultan Mahmud, when the celebrated Ghaznavid Empire reached the pinnacle of power, the court retinue deserted the cold climate of the capital, Ghazni, to spend the winters at Lashkar Gah.

Sultan Mahmud built a splendid royal palace on the east bank of the Helmand River and conducted here the affairs of state. His soldiers and war elephants defended the fortresses while travel and trade flourished on the Helmand-Arghandab Rivers.

The arch of Qala Bist at the junction of the rivers is the sole structure of this era that remained intact through successive years of invasion and strife. The massive, crumbling walls which line many miles of the river south of Lashkar Gah are today reminders of the glories of the "second capital" of the Ghaznavids. The arch is considered an outstanding example of Islamic design and in 1948 its restoration, to prevent eventual destruction by erosion, was initiated by the Ministry of Education. Representatives of Kabul Museum and the Department for the Preservation of Historical Relics brought members of a French archaeological team to the site. Experts studied the ruins of walls, arches and towers with their



THE ARCH OF QALA BIST

remnants of decorative tile, plaster and paint. Fragile murals remaining in sheltered parts of the walls believed to have been Sultan Mahmud's audience hall, were removed to Kabul Museum for safekeeping.

That Sultan Mahmud brought to his court the most noted writers, artists and scholars from far and near is well known. The epic poem known as Shah Nama or Book of Kings was composed at that time to immortalize the Sultan's exploits. Portions of this literary work were committed to memory and have been repeated in each generation, keeping alive the story of the Ghaznavid Empire.

The beauty of Ghazni was reduced to ashes in the 12th century by Sultan Alaaddin Johan Suz, a king from the Ghor mountains between Herat and Kandahar. This leader earned the title "World Burner" in 1152 A.D. as the Ghorid dynasty came to power. Some historians believe the Ghorids also destroyed the winter capital on the Helmand.

Genghis Khan again devastated the area between 1220 and 1224 A.D. and in the closing years of the 14th century, Temur Koragan (Tamerlane) destroyed whatever remained or had been rebuilt. The irrigation systems that had been the lifeline of a lush valley agriculture were abandoned to decay and collapse. Formerly productive areas along the Helmand River reverted to barren desert.

Descendants of Tamerlane began the restoration of the country. Babur, fifth in lineage, left as a monument of the 16th century the now famous Chilizina or Forty Steps on a mountain near Kandahar. In a niche at the top known as Babur's throne, his victories and those of his grandson, Akbar, are inscribed in stone.

A period of Persian rule preceded the formation in 1747 of the Afghanistan of today and the rule of Ahmad Shah. His reign is remembered as one of justice, moderation and wisdom. Kandahar was the capital, and it is here that Ahmad Shah, who became known as the Father of Afghanistan, is buried.

An heir of Ahmad Shah, the ruler Timur Shah, became displeased with Kandahar and moved the capital to Kabul where it has remained. The many inheritors of Ahmad Shah who fought for the throne after his death are held responsible by modern historians for the years of civil war, upheaval and rebellion that gripped the country and marred the next century.

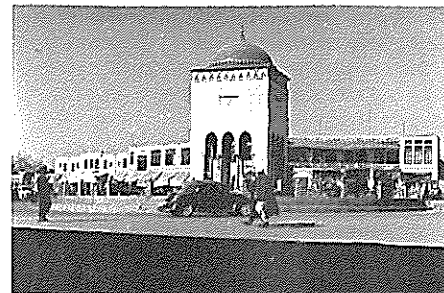
In 1834 Kandahar province became the scene of a deciding battle between two of these forces under the leadership of Dost Mohammed and Shah Shuja, with the victory going to Dost Mohammed.

Three wars were fought against the British as the young Afghan nation tried to remove itself from foreign domination and influence. Complete independence was achieved in 1919 but there were periods of conflict as attempts were made to modernize the country. Tribal and traditional ideas and practices did not yield readily to change and there was strong resistance to central government policies.

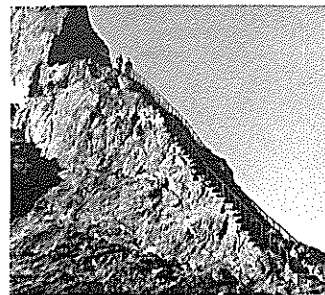
It was only after the present King Zahir Shah ascended to the throne in 1933 that Afghanistan began to emerge as a nation ready to accept a position of responsibility in the world. Profiting by the experience of earlier rulers who had attempted bold changes too quickly, the new King began a program of reform on a modest scale.

A constitution, adopted in 1964, proclaimed that "Afghanistan is a Constitutional Monarchy." It affirmed Islam as the sacred religion of the country; designated Pashto and Dari as the official languages; and adopted the tri-color (black, red and green) flag as the national emblem.

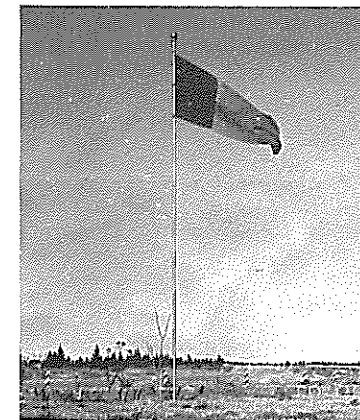
Improvements in agriculture have been considered of prime importance in King Zahir Shah's program, and one of the first major projects was begun in the Helmand-Arghandab Valley.



THE WAR MEMORIAL in the center of Kandahar symbolizes the victory of Afghanistan over the British.



THE CHILIZINA or Forty Steps is a monument of the 16th century left by Babur, a descendant of Tamerlane.



THE FLAG OF AFGHANISTAN.





### III. Background: How the Project Began

Initial development of the Helmand Valley Region began 30 years ago when the Royal Government of Afghanistan (RGA), striving to improve agriculture, employed Japanese engineers to rehabilitate the Deh Adam Khan Canal above Girishk.

Through this system water had been diverted from the Helmand River for more than 200 years to irrigate the valley along the west bank. Original plans called for enlargement and realignment of the waterway to better serve existing farms and some additional acres.

Using hand labor almost exclusively, the work had proceeded about 14 kilometers ( $8\frac{1}{2}$  miles) by February 1942 when the Japanese were recalled home by the outbreak of World War II.

Afghanistan continued the work with no outside assistance during the next four years, completing another 26 kilometers (15.6 miles) of the canal. Plans were revised during this period to relocate some sections of the channel and establish new points of diversion and intake.

Seeking to expedite the project and obtain technical advice when World War II ended, the RGA negotiated a contract with Morrison-Knudsen, an American construction firm, with funds made available by the U.S. Export-Import Bank.

In 1946 that company established Morrison-Knudsen Afghanistan, Inc. (MKA) to facilitate operations in this country, making regional headquarters in Kandahar. Their mission necessitated building roads, establishing permanent camps and training many Afghan laborers to operate machinery or perform skilled work. The company was awarded additional contracts in 1950 and 1954 which continued actual MKA operations until 1960.

Renewed activity inspired more detailed planning and what had earlier been visualized as modification of only one canal now became a project of regional scope.

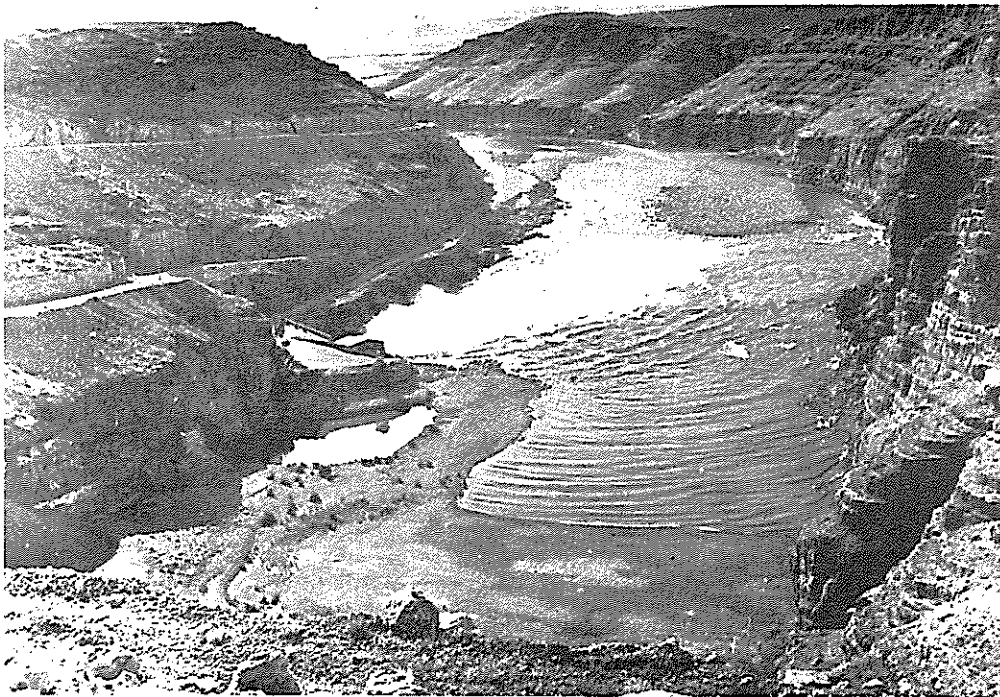
THE SHAMALAN CANAL branches from the Boghra, following valley alluvial lands along the right bank of the Helmand River. Qala Bist forms an impressive backdrop at this point.

The original channel, later renamed Boghra Canal, was lengthened to make irrigation water accessible to desert bench land in areas now known as Nad-i-Ali and Marja.

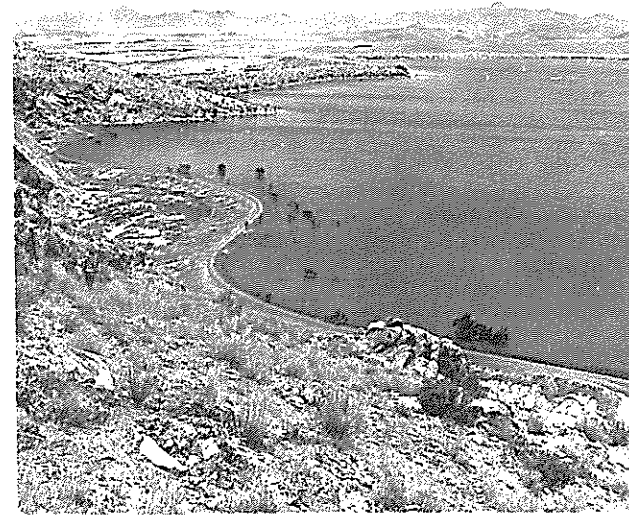
The next step, regulation and control of the Helmand and Arghandab Rivers, was to assure a constant water supply for future area development.

The Helmand River, although supplying abundant water on an annual basis, often has summer lows when crops are most in need of irrigation. The smaller Arghandab River also is depleted by the demands of Kandahar's large population and heavy fruit production in the province. To control the cycle of spring flood and summer drought, two reservoirs were constructed.

Kajakai Dam on the Helmand is 72 miles above Lashkar Gah. Arghandab Dam is 30 miles northeast of Kandahar



KAJAKAI DAM on the Helmand River



ARGHANDAB RESERVOIR

From Kajakai reservoir water flowing down the Helmand River enters the Boghra Canal at a diversion dam above Girishk. A second canal, the Shamalan, branches from the Boghra about 18 miles downstream. It follows valley alluvial lands on the right bank, providing water for juis that previously took water directly from the river. The Darweshan diversion dam and canal bring water to the left bank along a 30-mile stretch farther downstream.

In the Arghandab valley, South Canal brought the new and more reliable water supply from Arghandab Dam to land around Kandahar. An extension, Tarnak Canal, serves the area south and southeast of the city, near the International Airport.

Under MKA operations, extensive irrigation laterals and drainage systems were constructed in Nad-i-Ali and Marja areas and some major drains were completed for Shamalan and Darweshan.

One of MKA's last jobs in the Helmand Valley was construction of a small hydroelectric plant (about 3,000 KW) on the Boghra Canal about midway between the diversion dam and Girishk. Built in 1959, this plant generates electricity for Girishk, Lashkar Gah and Chah-i-Anjirs.

A study of resources during this period, both general and in project areas, was made by an MKA associate, International Engineering Company. It was published in 1959 under the title, "Report on Soil and Water Resources of Southwest Afghanistan."

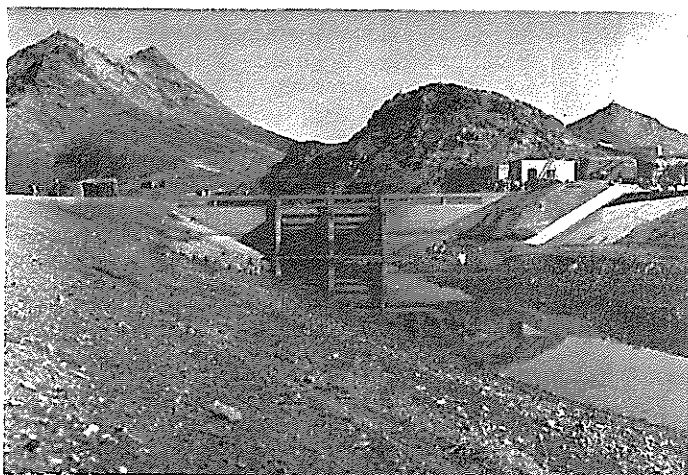
The Tudor report, prepared for the U S. Government in 1956 by Tudor

Engineering Company, also is still widely read and quoted. Numerous later studies have reviewed developments, identified problems, and made recommendations for agricultural growth and improvement.

With the departure of MKA units, authority for further development of the project was delegated to the Helmand Valley Authority (HVA) and the Afghan Construction Unit (ACU).



ARGHANDAB RIVER water is diverted to the Zahir Shah Canal at this bridge.



ZAHIR SHAH CANAL near Kandahar is regulated by irrigation structures built in 1956 by Morrison-Knudsen.

HVA had been chartered by the Royal Government in 1953 to supervise major programs in the Helmand-Arghandab watershed which overlaps several provinces. These included land development, irrigation, agriculture, education, public health, industry and power. The name of the organization was changed in 1966 to Helmand-Arghandab Valley Authority (HAVA). Operating under the Ministry of Planning, HAVA headquarters is in Lashkar Gah, capital of Helmand province.

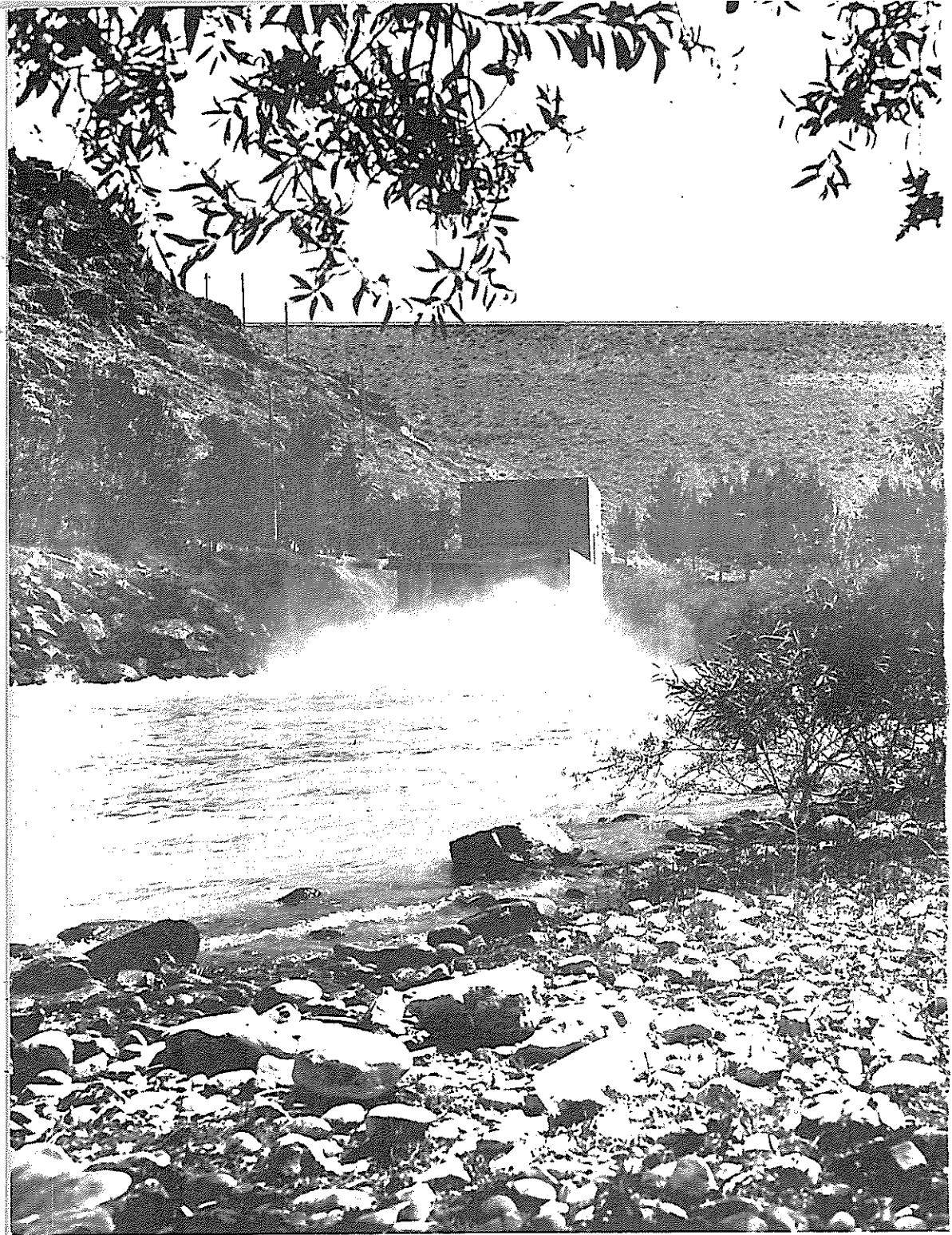
ACU, which since 1953 had been a division of HAVA, was later designated Helmand-Arghandab Construction Unit (HACU) and made a separate enterprise. MKA technicians and machinery were originally used to staff and equip the organization, but in recent years the Construction Unit has been developing its capabilities independently, with the support of HAVA. HACU is now responsible for all major HAVA construction programs. In addition to leveling agricultural lands and supplying irrigation or drainage canals, roads and bridges have been built and domestic water and sewer systems developed for Lashkar Gah. The unit maintains its own major construction and transportation equipment.

Efforts to develop the valley economy have been hampered because most units of the irrigation system were only partially complete when MKA departed.

The task of following original project plans while coping with new problems has been difficult but the experience has been valuable. More certain knowledge of agricultural requirements of the area is now available and guidelines have been established for the future.



NAD-I-ALI AREA drain and wasteway illustrates the need of such facilities to prevent waterlogging of farm lands.



## IV. Costs and Calculations

The construction of dams on the Helmand and Arghandab Rivers and continuing development of the irrigation systems necessary for modern agriculture have required vast sums of money.

The RGA estimates that more than \$100 million from its own resources and foreign loan funds have been invested in building the basic infrastructure of the water and potential power system. Economic and technical aid from other nations has played an important role in achievements of recent years.

The RGA relied upon its own financial resources in developing the Helmand Valley until 1949-50 when it applied for and received the first of two loans from the United States Export-Import Bank. A second loan, granted by the Export-Import Bank in 1953, boosted the total amount loaned to \$39.5 million.

Altogether, the United States has made \$73.4 million available for projects in the Valley. New loans totaling \$16.6 million were approved in mid-1967 for equipment and personnel services to assist the HAVA land development program and for expansion of electric power.

While not specifically Helmand-Arghandab Valley projects, U.S. assistance in establishing or improving transportation facilities has been important in the Valley's economic progress. Both surface and air routes have realized substantial benefits from this portion of U.S. assistance to Afghanistan.

Kandahar International Airport, one of the country's most important installations, was completed in 1962 with \$14.6 million of U.S. aid. Another \$53 million of U.S. funds provided a paved road from Kandahar to Kabul which was dedicated in 1966.

As early as 1960 the United States had supplied about 65 miles of asphalt surfacing at a cost of \$2 million for improving the road from Kandahar to Spin-Baldak near the border of Pakistan. This gave Afghanistan all-weather access to a railroad leading to the port of Karachi so that fruit, wool and other commodities could reach distant markets. It also provided the highway on which imported construction equipment and other supplies move into the Valley.

WATER FROM ARGHANDAB RESERVOIR  
is released into the river at  
this gatehouse below the dam.



KANDAHAR INTERNATIONAL AIRPORT was completed in 1962 with \$14.6 million of United States aid.

Other countries besides the U.S. have shown interest in the Helmand-Arghandab Valley and in assisting the RGA, particularly in the development of industry and transportation. The United Kingdom provided financial and technical aid for the establishment of a cotton gin which is now in operation in Lashkar Gah. They also recently completed a cotton oil mill with facilities for fabricating containers to handle and market the oil products. In Kandahar, a fruit processing plant was built with Czechoslovakian aid.

A highway from Kandahar to Herat, built by the U.S.S.R., has improved transportation between Herat, Kandahar and Helmand provinces. This concrete road passes through Girishk and comes within 30 miles of Lashkar Gah. Paving of a gravel road connecting Lashkar Gah with this highway is in the HAVA program of public works.

In 1956, after evaluating the resources and estimating the most pressing needs of the country, the RGA published a program for development called the First Five Year Plan. Valley development has proceeded under successive plans which are under constant review and revision.



## V. Agricultural Awakening

### The Past

Farming has always been a simple operation in the Valley with methods and equipment virtually unchanged from one generation to another. A man, therefore, needed only primitive implements and a work animal or two to earn his livelihood from the land.

A metal-pointed stick plow drawn by oxen turned the soil. Land leveling was done with a shovel, or a board called a Racol which was pulled by oxen moved the soil from high to low places. To smooth contours, the farmer stood on logs joined in "T" formation and drove his oxen across the field.

Wheat seed, scattered by hand, was covered by again plowing the field. There was little weeding or cultivation. Only scant amounts of fertilizer were used, but farmers learned the value of organic materials for enriching the ground. The practice of bringing soil from old ditch banks for distribution in fields, orchards or vineyards was widely accepted.

After the wheat was sown and covered, a shovel-and-rope implement handled by two men constructed borders around basins to facilitate irrigation. Harvests were gathered by hand sickle and threshed by the trampling hooves of donkeys or oxen. Grain was cleaned on a windy day when it was tossed up into the air by wooden forks.

Farms of 12 to 18 acres, which were common, produced only enough food for the farmer's family. Owners of larger acreages, who had tenants making their living from the land, usually sold some surplus products. Cash crops, transported in primitive containers to market by camels or donkeys, suffered heavy tolls in perishable vegetables or fruit. However, farmers of the Kandahar area have always realized substantial profits from the sale of pomegranates, grapes and raisins to Pakistan and India. In recent years, trucks have carried these seasonal products across the new, improved highways to distant markets.

Many Valley farmers were born on the lands which had been owned by their families for many years. Tax rates were low, little land was sold, and transfers of land ownership were not officially recorded.

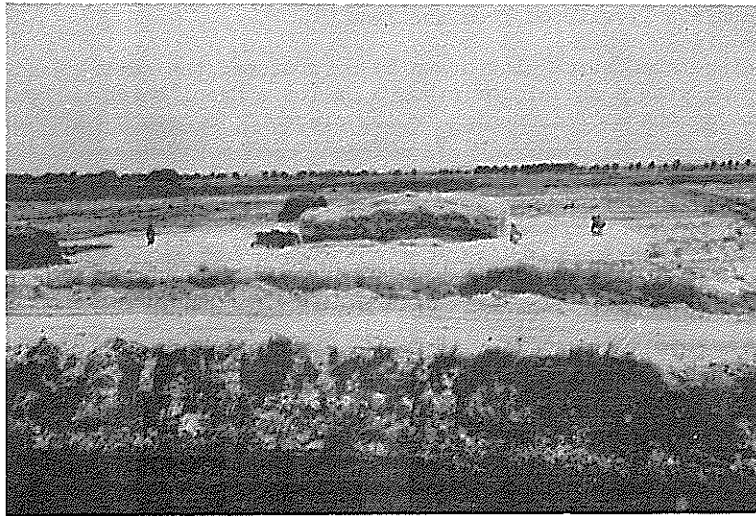
WHEAT PRODUCTION has been increased in the Helmand-Arghandab Valley through the use of several new varieties of seed.



The RGA has never assessed taxes on the people for payment of construction costs on dams, canals or drains. Because these investments have been considered valuable to the nation as a whole, the expense was borne by the national government.

A giant step will be required if the gap is bridged quickly between ancient farming methods and modern 20th century agriculture capable of meeting production goals of the Third Five Year Plan.

There are varying opinions on what is needed, how it should be accomplished, and the order of precedence one requirement might have over another. On the subject of mechanization alone, recommendations beginning with designs for better plows continue through a full range of motorized implements.



A GIANT STEP will be required if the gap is bridged quickly between ancient farming methods and modern 20th century agriculture capable of meeting production goals of the Third Five Year Plan.

#### THE PRESENT

Afghanistan's greatest need is for increased agricultural production to meet the food requirements of a growing population.

The Helmand-Arghandab Valley is seen not only as potentially capable of self-sufficiency in food crops but with enough land and water resources for producing sizeable surpluses of grain and other products.

HAVA has therefore set as basic agricultural goals: (1) Improved Yields of wheat and corn, helping to meet national self-sufficiency goals; and (2) Increased Production of agro-industrial products, promising good economic returns as well as earning or saving foreign exchange.

Greater production on private or individual farms has been deemed preferable by the Government to the alternative solution -- "large state mechanical farms and livestock centers." In a recent publication, in support of the Government position, HAVA expresses the desire to "promote the economic, social and living levels of the people of this area."

The land development program and plans for completion of the irrigation system have been outlined. Once these objectives are accomplished, HAVA believes agriculture can be modernized through: (1) use of improved seed and fertilizers; (2) better cultural practices and irrigation methods; (3) pest and weed controls; (4) agricultural credit for farmers, and finally, (5) cooperative marketing efforts. Preliminary planning for all these programs is being carried out in HAVA's Agricultural Department with USAID technical assistance.



FIELDS AND ORCHARDS near Kandahar form neat patterns to the east of the mountain of the Forty Steps.

Farmers are beginning to abandon ancient farming practices and adopt modern methods of agriculture. In the Helmand-Arghandab area, private landowners recently purchased 82 tractors and have placed orders for 75 more. The demand for improved seeds and fertilizer is also increasing rapidly.

The agricultural research program began in Helmand province in 1955. It is being continued at Bolan, Darweshan, Marja and Nad-i-Ali stations where promising crop varieties, fertilizers and improved cultural practices are tested under controlled conditions. Mechanized farming has been introduced, and seed multiplication programs are under way at Tarnak, Gawragai, and Marja areas exceeding 3,000 acres. As a result, about 15,000 tons of improved wheat seed have recently been distributed in Helmand and Kandahar provinces and to neighboring provinces of Herat, Farah, Chakhansur, Ruzgan and Zabul.

Recent wheat tests indicate that several high yielding varieties are well adapted to local conditions. Three of the most promising, Lerma Rojo 64-A, Indus 66 and Mexipak, have produced up to 90 bushels per acre on private farms, compared to the traditional average of 15-20 bushels per acre. These varieties show a high degree of resistance to rust and lodging. Sixty tons of Indus 66 wheat seed were originally imported in 1967 from Pakistan after successful tests there under similar conditions.

Corn is regarded as the food crop of second importance in the Valley since it is well adapted to double-cropping practices. An American variety, Texas Yellow Surcropper, has consistently shown high yields in tests here over a period of years. Some farmers have already gotten as high as 100 bushels per acre using fertilized Texas Yellow Surcropper compared to the 18-bushel-per acre average of local varieties. Officials hope that the longer maturity period needed for the Texas corn, making it more susceptible to early frost damage, will not prove a serious detriment in its use. Farmers are showing interest in this corn, and the HAVA Agriculture Department has increased the seed extensively. In the 1968 crop year there was enough Surcropper seed to meet the needs of local farmers as well as supplying 100 tons of seed to the Pakhtia project. J-1, another promising variety, was increased on an area of about 130 acres, and is expected to provide seed for about 15,000 acres in the coming season.

From HAVA research stations, recommendations on new varieties, irrigation, uses of fertilizers, weed and insect control and cultural practices are relayed to individual farmers by Extension Service agents. In the 1968-69 crop year there were 75 of these trained agriculturalists working in the Helmand-Arghandab area. They are conducting 210 wheat demonstrations, 146 corn demonstrations and 79 cotton demonstrations on privately owned land to convince farmers to use the improved seed, fertilizers and improved cultural practices required to get high yields. In 1968 farmers harvested over 1,000 acres of Surcropper corn and in 1969 farmers will harvest over 10,000 acres of improved wheat. More than 3,000 tons of fertilizer have been sold to the farmers. Results have been very good with most farmers reporting at least double their previous yields.



HIGH YIELDS OF CORN have been obtained in government research tests with an American variety, Texas Yellow Surcropper.

In Helmand and Kandahar provinces over 300,000 orchard and ornamental trees are being planted annually. A spraying program is being carried out under the direction of technicians of the Extension Service. In addition, 2,000 to 5,000 acres of waste lands are being planted to forest annually.

Specialists from the HAVA Livestock Division strive to improve the quality of cattle, sheep and poultry. This division conducts research on feeds and their effect on milk, meat and egg production. Brown Swiss cattle have been imported as breeding stock and a strain of Indian cattle is being tested for adaptability to this climate. Crossing Brown Swiss bulls with native cows has been a popular program, with at least 300 farmers' cows being bred annually. The progeny have produced twice as much milk and the male crosses command premium prices as bullocks. Artificial insemination service is being started soon to make it possible to vastly increase the number of cows that can be bred by the available bulls.

Better strains of sheep are being developed for the production of fine quality wool, especially yarn wool suitable for carpet weaving.

A rudimentary livestock disease prevention program is in effect and animals can be vaccinated, given medication, or sprayed. Liverfluke, found both in sheep and cattle, is a serious problem that is receiving special attention.



A MELON FIELD in Helmand province.

In Lashkar Gah a dairy plant capable of pasteurizing 2,900 pounds of fresh milk per day has been established. Facilities are available here for making butter, cheese and ice cream. Production has not yet reached capacity because of a shortage of milk, most of which is presently produced on Government farms.

A poultry breeding flock provides eggs for a 5,000-egg capacity hatchery. Baby chicks are sold throughout the country.



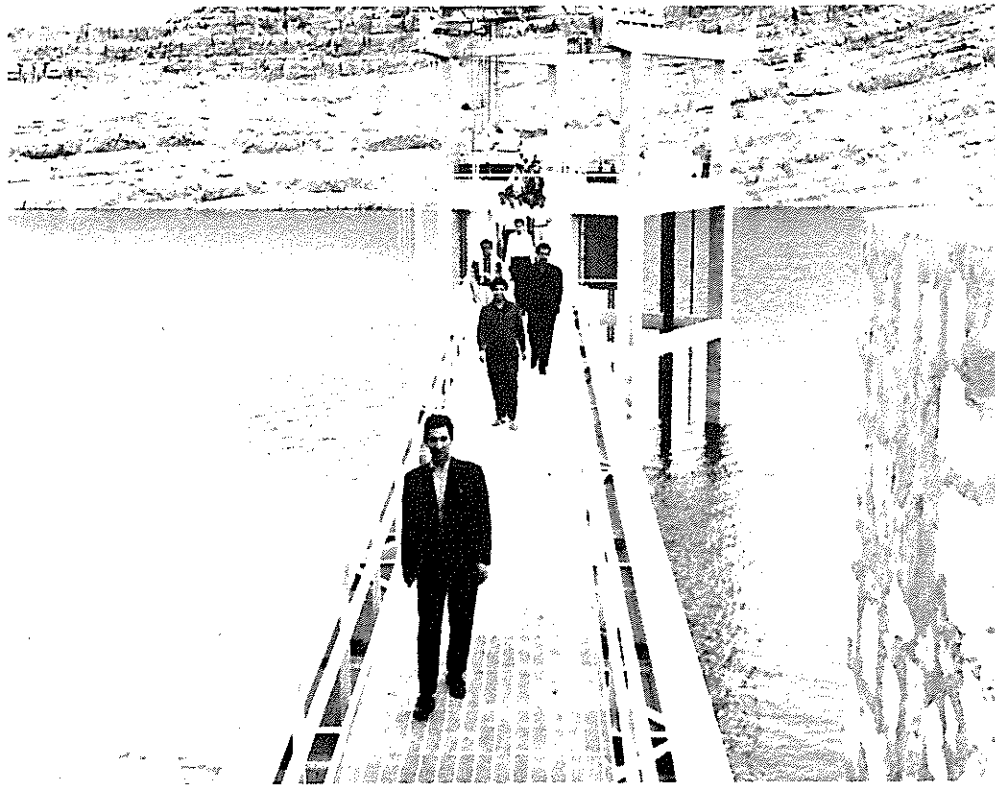
POMEGRANATE TREES are planted with a field crop near Kandahar

## THE FUTURE

HAVA has laid an excellent agricultural development foundation over the past 15 years, starting virtually from scratch. It has progressed to the stage that ways have been found to dramatically increase yields of the major crops. The Extension Service has trained an effective corps of field workers who have gained the confidence of the farmers. HAVA seed increase programs have produced the new seeds in abundance. In 1968 about 10% of the wheat and 2% of the corn lands of the area were planted with improved seed, using fertilizer and improved methods. During the balance of the current 5-year plan, HAVA hopes to extend this program on its two major food grain crops, to at least half the acreage planted. This should result in rapid increases in total agricultural production of the area.



Helmand Valley farmer describing his success with improved wheat varieties to Minister of Agriculture and Irrigation, Mir Mohammad Akbar Reza, and President of HAVA and Helmand Province governor Mohammad Hashim Safi.



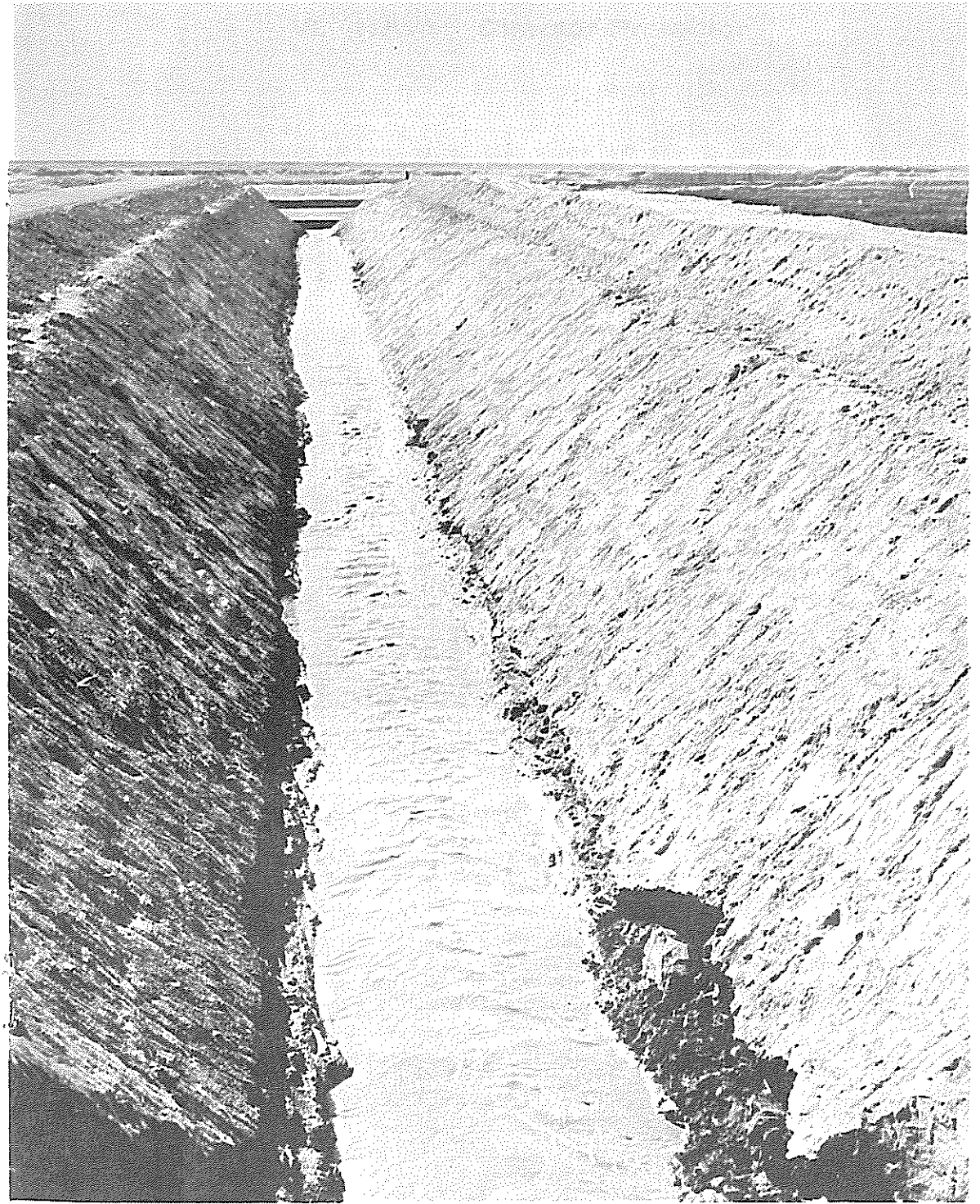
Gate structure in the lake behind Kajakai Dam.

To take advantage of modern technology, farmers need large additional investments in new inputs such as improved seed, chemical fertilizer, insecticides, mechanized equipment, etc. Most farmers need credit if they are to take full advantage of these new inputs. Therefore, USAID is helping HAVA to start a supervised agricultural credit program which expects to start making low interest loans to farmers before the end of 1969.

More attention is being directed towards cash crops that can earn or save foreign exchange. Increases in oil crop production are planned to supply raw material for Lashkar Gah's new vegetable oil processing factory. Acreage is being expanded in the lucrative horticultural crops such as pomegranates, grapes, apricots, apples, peaches, plums, figs, watermelons, melons, onions, carrots and cucumbers. Research is being carried out constantly to determine feasibility of possible new crops such as sugar beets, jute, guar, peanuts, sunflowers, and soybeans.

Emphasis is currently being placed on more intensive use of available lands of the area. Some land is left idle due to lack of sufficient labor and bullocks to farm it all. Now that there is adequate water available throughout the entire year, double-cropping (summer crops planted after the wheat harvest) is not only possible, but highly encouraged. As more tractors, threshing machines, and other mechanized equipment become available, the acreage of double-cropping should increase rapidly and the acreage of idle land should decrease. Farmers owning tractors and mechanized equipment will be able to plant their crops in a small fraction of the time required with bullocks and traditional implements and should be able to keep their land in crops throughout the year.

The Green Revolution that is sweeping Asia has reached the Helmand-Arghandab Valley.



## VI. HAVA: Director-Protector

The wide range of responsibilities which HAVA must assume in the Helmand-Arghandab Valley makes this agency virtually the guardian of public interests.

Apart from agriculture, irrigation and land development, HAVA works to expand power and industrial facilities and is accountable for progress in the fields of education and public health.

NEW DRAIN NEAR KANDAHAR exemplifies HAVA concern for agriculture, irrigation and land development.



HAVA HEADQUARTERS in Lashkar Gah.

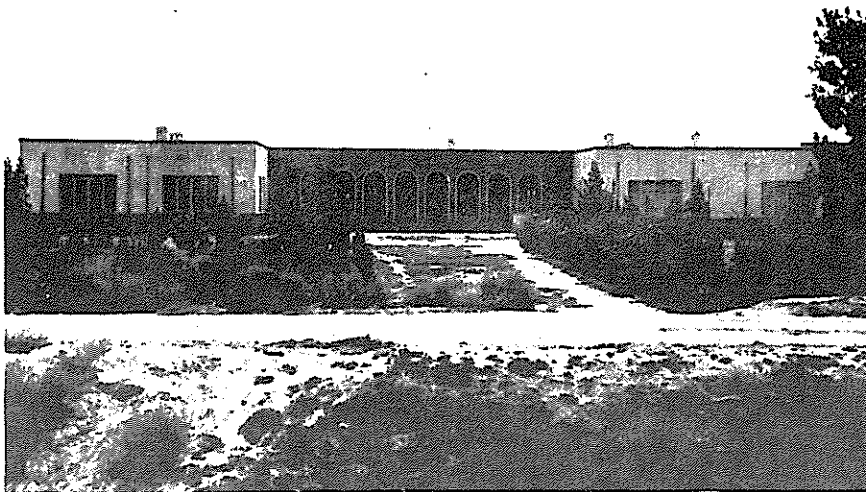
### EDUCATION

The need for improving and expanding the educational system of Afghanistan has been recognized and provided for in each of the Government's Five Year Plans.

Since 1957, when the first of these plans was inaugurated, many accomplishments have been noted. Shortages of teachers, buildings and materials are serious handicaps but the Ministry of Education estimates that by 1980 65% of the children of Afghanistan's 7-12 age group will be in school.\*

\* Kabul Times Annual-1967

In the past 10 years HAVA's Department of Education has opened and operated in Helmand province 12 village schools, nine elementary schools, one junior high and one high school, Lashkar Gah Lycee. Some of these schools are co-educational, a new concept in teaching in Afghanistan. At Khatole Kindergarten, children of four to six years receive pre-school training.



SCHOOL BUILDINGS such as this one are being constructed in villages of the provinces.

Although confronted by similar problems in the Valley, HAVA is striving to provide educational opportunities for both children and adults. This includes supplementing and extending the program of the Ministry of Education in both urban and rural areas. Much of this development in education has been achieved with direct USAID assistance, which totals to date \$55,000.

Schools have been established so that children and young people can receive a basic education and adult workers are being trained in vocational and technical skills. HAVA encourages all of the people to become "literate, enlightened and informed" so they may understand and assist the progressive planning of their Government.

Enrollment figures for Helmand schools in mid-1967 were listed by HAVA as 2,777 with the number of students expected to exceed 4,000 in the next academic year.

Dormitories were being constructed for 500 students at Lashkar Gah Lycee, a new co-educational institution. Both classroom facilities and dormitories were financed by United States PL 480 Title II funds totaling 15 million Afghanis (approximately \$200,000). In addition to the regular curriculum prescribed by the Ministry of Education in Kabul, this high school offers home-making and child care courses for girls and an agricultural program for boys. Graduates are offered jobs with HAVA or are given the opportunity to study abroad in order to qualify for technical or teaching positions at home.

English, typing, accounting and drafting courses have been made available so that HAVA personnel, already working in various departments, can improve their skills. HAVA officials may also receive secretarial and clerical training.

At the recently established Helmand Women's Institute in Lashkar Gah, literacy courses have been programmed in four grades. There are English classes for women who have completed their elementary education and wish to study another language. Demonstrations and visual aids provide basic information on home-making, child care, sanitation and health practices.

More than 300 women have taken advantage of the opportunities offered by this vocational study center. Through a system of community centers being planned by HAVA, this type of education will be extended to village families.

Women attending the Institute learn to sew or weave and can supplement their family income by participating in a crafts program. Here traditional Afghan designs and needlework proficiency combine to create marketable items. Hand-made dolls in Afghan national dress, much admired in the foreign community, assured the financial success of the project. A variety of household and gift articles were later added.

In Kandahar province officials estimate that 29% of the boys and 5% of the girls in the 7-12 age group are now attending school. Two high schools for boys and one for girls have a total enrollment exceeding 400.\*

Opportunities for additional study are available in several fields. More than 300 young men have been trained in Aeronautics under a U.S.-sponsored program, and the Cadastral Survey School (another USAID project) has graduated 400 surveyors. There is a teacher training center, Darul Mu Allamein, and instructors from the Republic of West Germany staff the Kandahar Technical School.

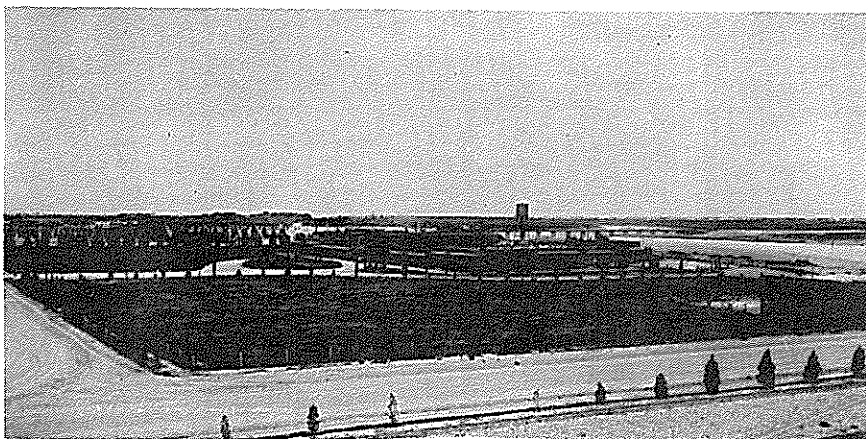
\* Kabul Times Annual-1967.

In 1966 it was announced that the RGA would establish a higher teacher's academy as the nucleus of a university in Kandahar. The Kabul Agriculture School has been transferred to Helmand Province.

Students who excel and are selected for higher education may attend Kabul University or institutions in other countries selected by the RGA. Some are being educated in the United States. Afghanistan also participates in the foreign exchange program of the American Field Service for high school seniors.

#### HEALTH

Lashkar Gah Hospital, a 50-bed medical center, is public health headquarters for the region. Construction and equipment of this hospital were financed by a U.S. grant of \$500,000 and an additional six million Afghanis derived from PL 480 Title II funds.



LASHKAR GAH HOSPITAL as seen from the HAVA building.

A daily out-patient clinic is available here but medical personnel also go into the villages to see patients and dispense medication. Although there is a shortage of vehicles and trained personnel, efforts are made to reach remote rural communities. A few small dispensaries in outlying districts have a permanent duty officer.

At the present time hospital personnel include two internists, three surgeons, 28 nurses, one x-ray and one laboratory technician, a midwife, three pharmacists and a dentist. Two American nurses and a laboratory technician, Peace Corps Volunteers, assisted in 1966-67 and the U.S. State Department physician for the American community, who arrived in late March 1967, also voluntarily serves as consultant-assistant in surgical cases.

In a two-year period more than 25,000 out-patients were treated at Lashkar Gah Hospital clinics and another 690 persons were admitted to the hospital. Vaccinations for smallpox and cholera totaled 33,800 and more than 1,000 persons were given preventive treatment for other diseases (diphtheria, typhoid, etc.)

A safe water supply and sewage disposal system are ranked by HAVA as health needs of the provinces equaling that of improved hospital facilities.

The Ministry of Public Health in Kabul, concentrating its resources on preventive medicine in 1966, sent mobile units with teams of doctors, technicians, and health inspectors to both Helmand and Kandahar provinces. Malaria eradication programs also are underway in the Valley.

United Nations and World Health Organization programs have provided assistance and technical training in smallpox, trachoma, leprosy, malaria and tuberculosis campaigns. The U.N. Children's Fund supplied milk powder, vitamins and soap for distribution in 1966 to mothers and children at Lashkar Gah Hospital.

NOOR, an international organization for ophthalmological rehabilitation, now has an agreement with the Ministry under which they conduct periodic eye clinics in the provinces and maintain a regular clinic in Kabul. Both Helmand and Kandahar provinces have benefited from these clinics.



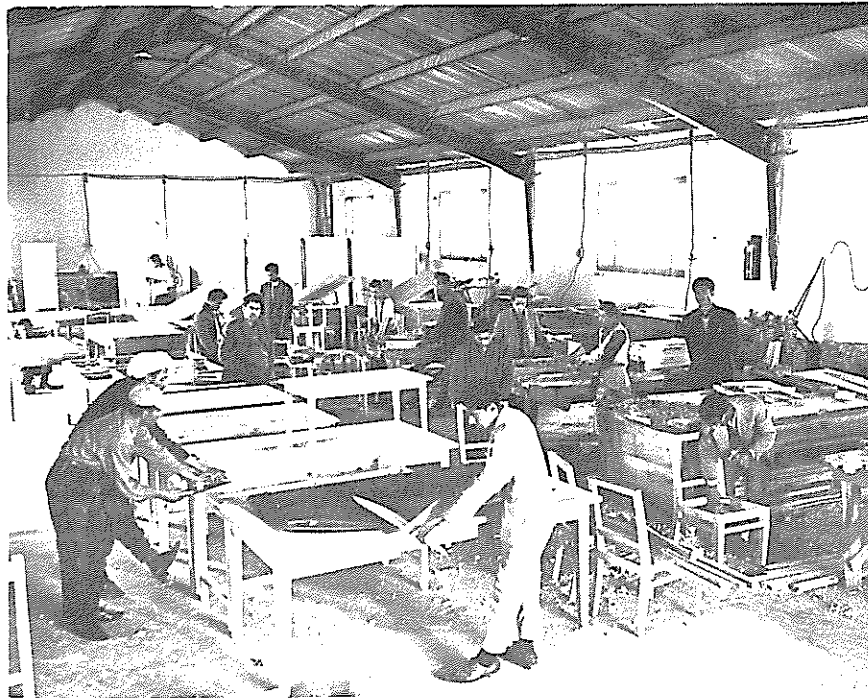
## INDUSTRY

In Lashkar Gah the alabaster and woodworking plants are the only industries not directly related to agriculture.

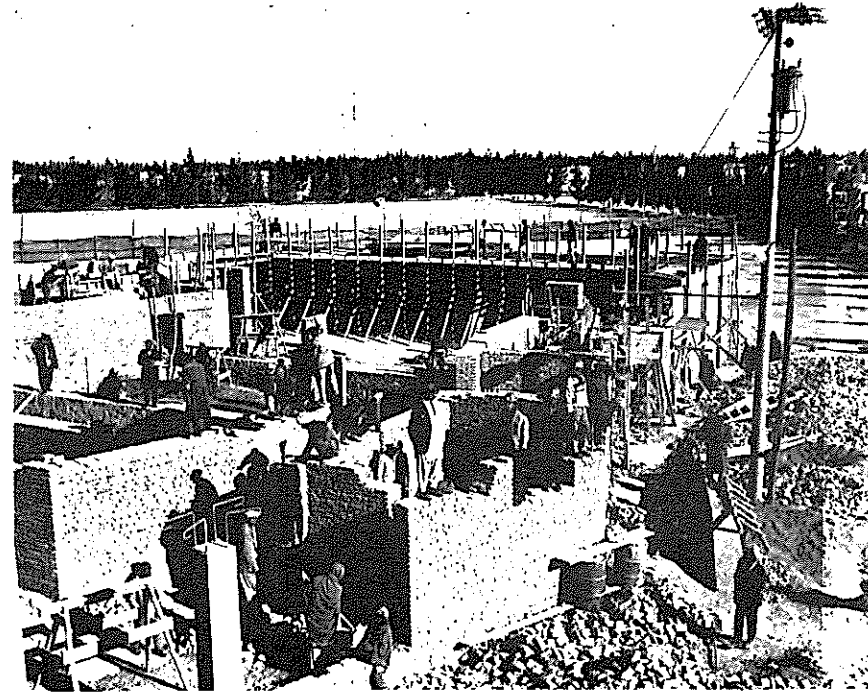
Materials for both operations are indigenous - the stone coming from five mines in Helmand province and the lumber from Kandahar and Kabul.

European machinery processes the alabaster. Many uses are being found for the polished slabs in the interior decoration of homes and public buildings. Small artistic objects such as bowls, platters and ash trays, all hand-carved and finished, are much in demand.

The plant, which is Government financed and operated under HAVA jurisdiction, has proved a profitable enterprise.



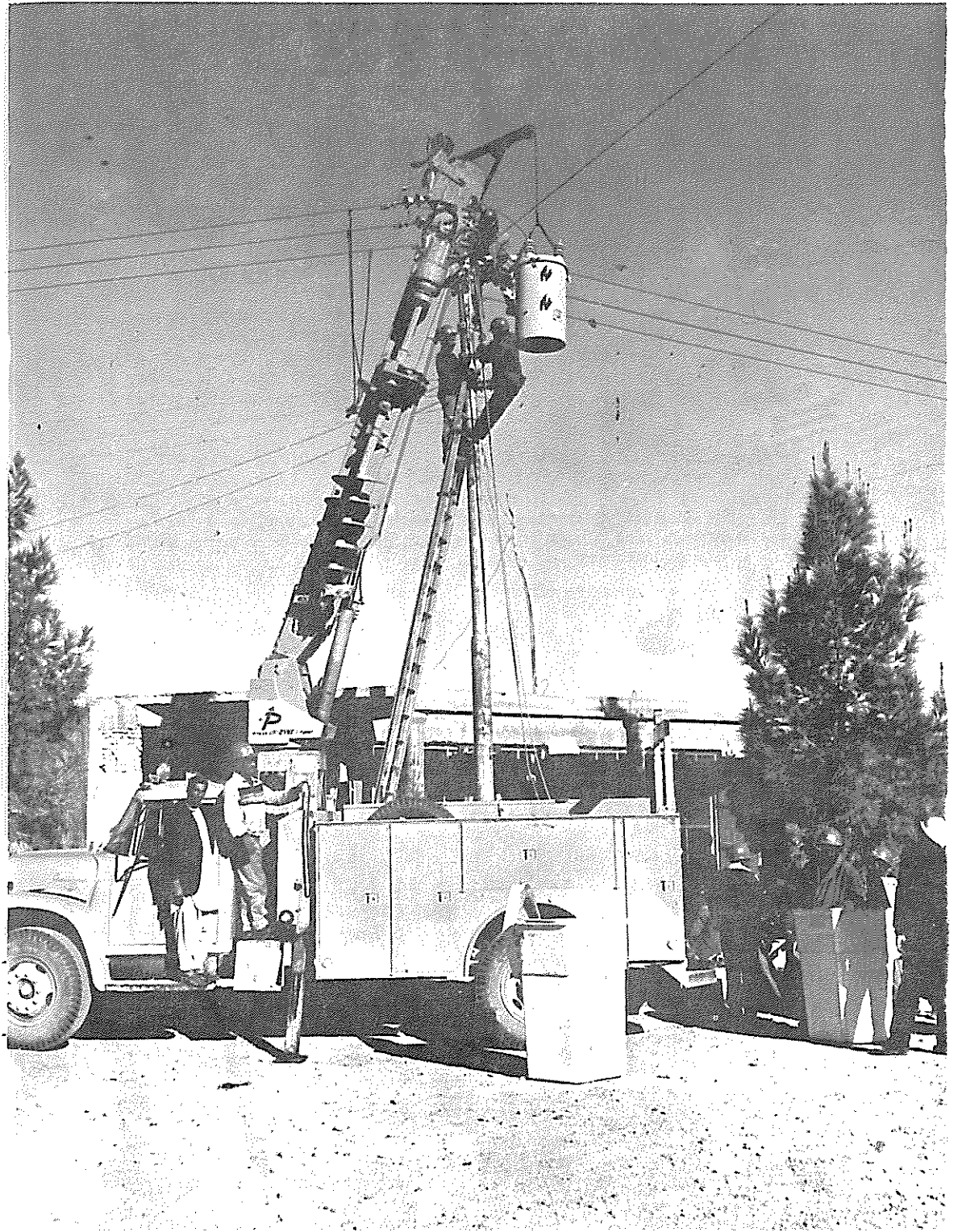
WOODWORKING and the manufacture of furniture is a growing industry in Lashkar Gah.



CONSTRUCTION of a cultural center in Lashkar Gah was proceeding under HACU direction early in 1969.

Products of the woodworking plant range from the manufacture of home and office furnishings to interior carpentry work.

In Kandahar a mill utilizes local wool in the manufacture of cloth and blankets, some of it for army use. European machinery is used to process the yarn which goes into handwoven rugs. It is expected that the rug weaving operations will be expanded.



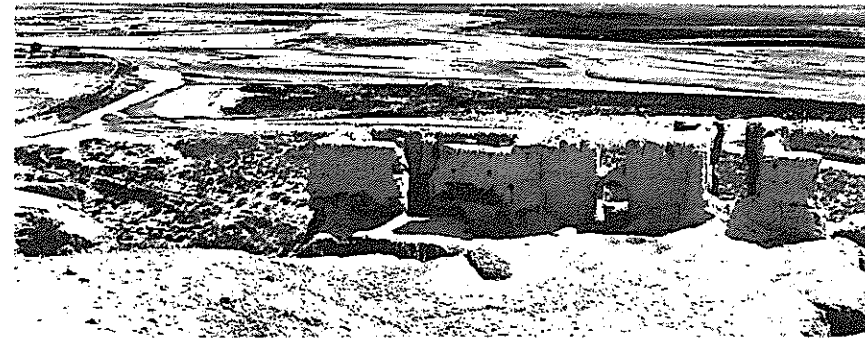
## VII. Rivers and Reservoirs

The watershed of the Helmand-Arghandab Rivers and their numerous tributaries occupies nearly half the total area of Afghanistan.

For centuries these rivers have supplied most of the water for irrigating grain and fruit crops and many of the old ditches (juis) are still in use. Farmers also depended on seasonal showers to produce run-off in wide, shallow washes from the bare mountains, irrigating large areas in one sweep. If these were not sufficient, there was the karez or qanat, that ancient and unique system of using ground water. Distinguished on the broad plains by their irregular mounds of earth, some of these systems are still functioning.

The Helmand River, more than 600 miles long, has its source in the Hindu Kush mountains not far west of Kabul where elevations range from 12,000 to more than 20,000 feet. Most of the river water comes from melting snow and descends from the rugged terrain north of Helmand and Kandahar provinces. The river flows 400 miles southwest and drops to an elevation of 2,460 feet at Qala Bist where it is joined by the Arghandab.

REHABILITATION of the electrical distribution system in the Valley is now underway.



FROM THE HEIGHTS OF QALA BIST the Helmand and Arghandab rivers may be seen as they converge and continue southward to the Chakansoor region.

The Arghandab is also a river of considerable importance although its several tributaries are only seasonal. Beginning northwest of Ghazni, the river continues in that direction, passing within a few miles of the city of Kandahar. The Arghandab is depleted by the water demands of acres of orchards and vineyards in this area and therefore contributes little to the Helmand.

About 200 miles southwest of Qala Bist, in the Chakansoor region and Siestan Basin, the Helmand reaches its lowest level, emptying into a vast marsh on the boundary of Afghanistan and Iran. Here, its energy reduced by heat and stagnation, the once mighty Helmand evaporates and dies in the desert.

The Helmand-Arghandab Valley is in the temperate zone with land elevations ranging from 1,500 to 3,000 feet. Rain, falling mainly between November and May, averages four to five inches a year near Lashkar Gah.

At Kandahar the average is about eight inches.

Temperatures rise in June, July and August to more than 100 degrees Fahrenheit and winds frequently add to the discomfort of heat. Winter temperatures seldom fall much below freezing but the climatic variations are unfavorable for the growth of citrus fruits. Frost may come as early as mid-October or as late as December but usually need not be feared after mid-March.

Sunshine in a cloudless sky is the general weather pattern of the Valley. Wind and dust at all seasons of the year add a discordant note. Even on very pleasant days a haze of dust may obscure or obliterate the distant skyline.

The desert area is rocky and has scant natural ground covering, mainly camel thorn and brushwood. Tree-planting is a project being promoted by the Afghan Government in order to replace depleted forests and dwindling wood supplies.

Valley soils are principally alluvium, of low to moderate fertility and organic matter. In many sections thin soil covers a layer of impermeable conglomerate. In others, waterlogging has caused saline or alkali deposits to rise to the surface creating a serious irrigation and drainage problem.



DONKEYS LOADED WITH CAMEL THORN plod along the Shamalan Canal road.

Wells about 250 feet deep supply potable domestic water for Lashkar Gah. The city of Kandahar depends mainly on water from the Patow Canal and its laterals but in the summer of 1968 began piping drinking water from two wells to streets in the main bazaar. In both provinces, farms and villages obtain water from canals and ditches, so maintenance periods on the irrigation systems must be limited.

Construction of the modern dams on the two rivers has alleviated periodic water shortages which used to occur in summer. It also has controlled, at the other extreme, spring floods which were a hazard each year when rivers, swollen with rain and melting snow, swept tons of debris downstream. Tributaries that are dry most of the year also become raging torrents rushing toward the main rivers during this season.

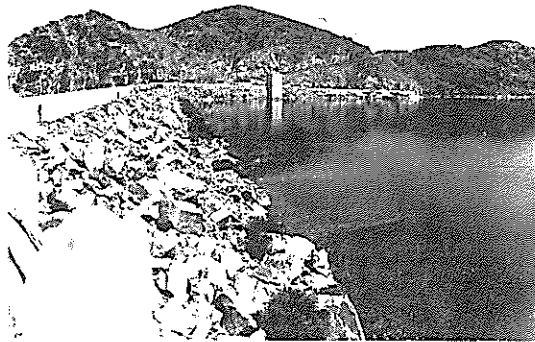
Kajakai Dam, costing over \$13 million, is constructed in a narrow and steep walled limestone gorge. (Kajakai is translated "small bend" and a village of the same name is nearby). The reservoir originally had a capacity of 1.5 million acre feet below the crest of the uncontrolled spillway. According to recent estimates the capacity could be

increased 70 per cent if gates were installed. The rock-filled structure has dimensions of 885 feet length, 320 feet height, and 33 feet width at the top. It has been well maintained since completion in 1953 and inspections show only minimum leakage has occurred in the ensuing 16 years.

Initial construction of the dam included two horseshoe-shaped, unlined tunnels of 34 feet diameter. The outer, irrigation tunnel is 2,340 feet long. The inner tunnel, designed for future power installations, will soon be equipped with two 16,500 KW generating units. A third unit can be accommodated when needed. Studies have shown sufficient water power available to supply at least 22 MW of electricity.

The drainage area of the Helmand River above the Kajakai measuring stations is approximately 16,300 square miles. The average annual stream flow of the Helmand below the reservoir is 5,026,000 acre feet. In 1957, the recorded annual flow was almost 9,000,000 acre feet at the gauge below the dam. The minimum, 3,227,000 acre feet, occurred in 1963. The highest flow ever recorded was in the spring of 1967 but the reservoir has filled and spilled in 11 of the years between 1953-1966.

Scenic Kajakai Lake is 40 miles long and the advantages of developing it as a recreational attraction are being considered by the Afghan Government. Studies on stocking fish have already been made. Accommodations for a few overnight guests are now available and the area can be reached by an all-weather gravel road branching up the Helmand Valley from the main Kandahar-Girishk highway.

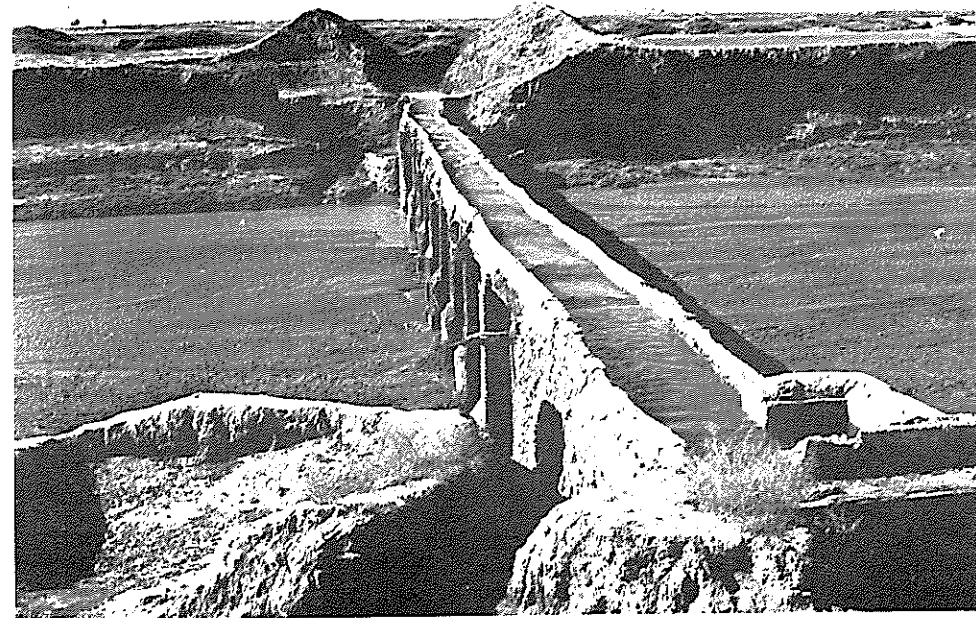


ARGHANDAB DAM stores approximately 388,000 acre feet of water for the irrigation of orchards and vineyards of Kandahar province.

The smaller Arghandab Dam, in the foothills of the Hindu Kush, was completed with U.S. assistance in 1952 at a cost of more than \$7 million. The earth-fill reservoir is 200 feet high and 1,770 feet long. It has 338,000 acre feet gross storage. There are two ungated spillways and a reservoir outlet works. A drainage area of 6,870 square miles has been computed.

This project was designed to provide irrigation, flood control and a water supply for the Valley and City of Kandahar. Provisions were made for a future hydro-electric power unit, but a shortage of water has delayed such development. While the Arghandab reservoir has added substantially to the region's water supply, it is still considered inadequate and supplemental sources are being sought. Suggested solutions include the development of wells, diversion of water from the Helmand, or a second storage reservoir on the Arghandab River.

The north central Arghandab areas and the Tarnak area receive irrigation water from Arghandab Dam. The most productive and prosperous



WATER FROM THE ARGHANDAB River is lifted across the Tarnak River in this flume, built and maintained by farmers south of Kandahar.

agricultural areas of the Valley are located here. Vinyards and orchards yield fruits that have become important export commodities. Fresh or dried fruits which are exported through Kandahar to Pakistan and India account for a large percentage of Afghanistan's foreign exchange earnings. The drying of raisins in the sun or in ventilated raisin houses throughout the district has become an important industry.

Helmand and Kandahar provinces rank third and fourth in size among the 25 provinces into which Afghanistan is divided. In population, Kandahar province ranks sixth with more than 650,000 people; the City of Kandahar accounting for about 77,000. Helmand province, with a population slightly above 350,000 ranks 15th. Lashkar Gah has a population of about 8,000 \*

In order to properly cultivate the lands of Helmand province, HAVA feels that more farmers are needed. A Government settlement program is expected to bring families here who now live in over-populated areas. Nomads also have been encouraged to make the Valley a permanent home and learn to produce crops.

\* Based on the Kabul Times Annual Report of 1967



## VIII. Teams and Technicians

Present United States assistance to Afghanistan is being administered through the Agency for International Development (USAID). Headquarters for the Helmand-Arghandab Valley Region is in the HAVA building in Lashkar Gah. A smaller operating unit is at Kandahar.

Since 1952 the United States has provided \$14.8 million in grants to bring technical knowledge and training to the Valley. This program includes USAID agricultural, education and administrative specialists, and a water resources advisory group from the Bureau of Reclamation. Afghan counterparts who work with these technicians learn the jobs they will later handle alone.

In Lashkar Gah, management improvement and training has been directed by a contract team from J.G. White Engineering Corporation of New York.

Engineers from Harza Company of Chicago and linemen of the National Rural Electrical Cooperative Association (NRECA), working between the Girishk Power Station, Lashkar Gah and Kandahar, are rehabilitating regional electrical distribution systems.

In Kandahar the Cadastral Survey School has been training young Afghan men to make the measurements which will ultimately determine land ownerships and establish a basis for property and water tax systems. A USAID financed contract with the Public Administration Service of Chicago, Ill., a non-profit organization, provided technicians to assist the RGA in this effort, both in an advisory capacity and as instructors. The school and cadastral survey field work have been supported since 1963 by about \$1.5 million in USAID grants and another 18.6 million Afghanis under PL 480 Title II.

Pan American Airways personnel and a Civil Aviation Assistance Group (CAAG) have supplied technical help at Kandahar International Airport. USAID contracts with these agencies have totaled about \$7.5 million.

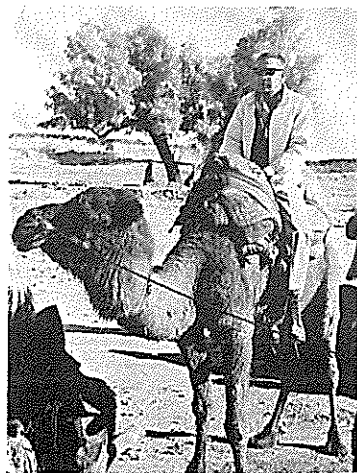
About 50 American families associated with the USAID program now live in Lashkar Gah or Kandahar. Another 25 unmarried men and women hold administrative or secretarial positions with teams or agencies.

WORKING TOGETHER--Afghan counterparts learn from American technicians the jobs they will later handle alone.



USAID TEAMS at Lashkar Gah and Kandahar include agricultural specialists and a water resources group from the Bureau of Reclamation.

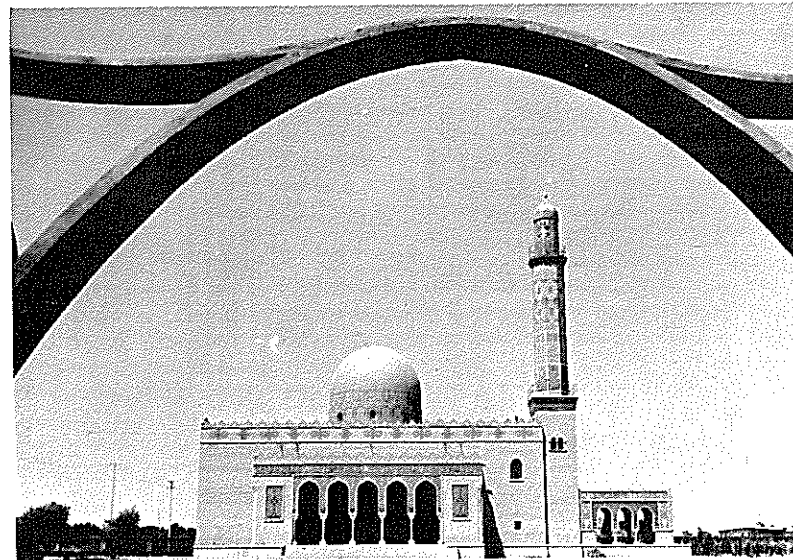
Social and community activities are an important part of their life as they maintain a "home away from home." They also acquaint themselves with their host country and its people, taking advantage of this opportunity to acquire personal knowledge of an area of the world which most Americans know only through books. The setting may be different, but it is no less interesting and friendships formed here often outlast the years of temporary residence in Afghanistan.



FUN IN THE SUN for Americans of the Helmand-Arghandab area is the annual December camel ride near Qala Bist.

Modern, comfortably furnished homes are provided in Lashkar Gah for USAID and contract team families. Here there are no walled, individual compounds as are traditional in older cities of Afghanistan for the new residential areas have been planned along modern lines. Americans and Afghan officials of the Helmand province are close neighbors and have the opportunity to become acquainted on adjoining home grounds.

The centrally located Mosque with its brilliant blue dome and tall minaret dominates the skyline of Lashkar Gah. Tree-lined boulevards have been designed to beautify this growing metropolis which is rising near an historical site on the Helmand River.



THE MOSQUE IN LASHKAR GAH



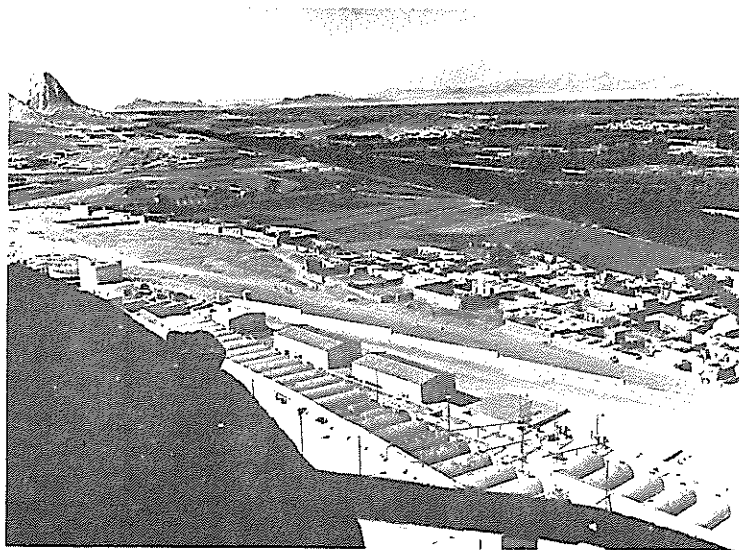
In April 1967 a two-kilometer, gravel air strip was completed for Lashkar Gah, financed by USAID funds in the amount of 25,000 Afghanis.

Kandahar, located 90 miles northeast of Lashkar Gah, is reached by traveling 30 miles on a gravel road and the remaining 60 miles on the paved Kandahar-Herat highway.

Lending variety to the landscape after many miles of flat and barren country are the mountains near Kandahar, lone masses of rock or sawtooth formations of unusual shape and erosion. Pine trees that have been planted on both sides of the highway mark the last miles on the western approach to the city.

The direct route through Kandahar follows wide, paved streets where homes, hospitals, schools, the provincial Governor's residence and the consulates of India and Pakistan are set in walled compounds. There are many new buildings of concrete and lightly fired brick and others are under construction.

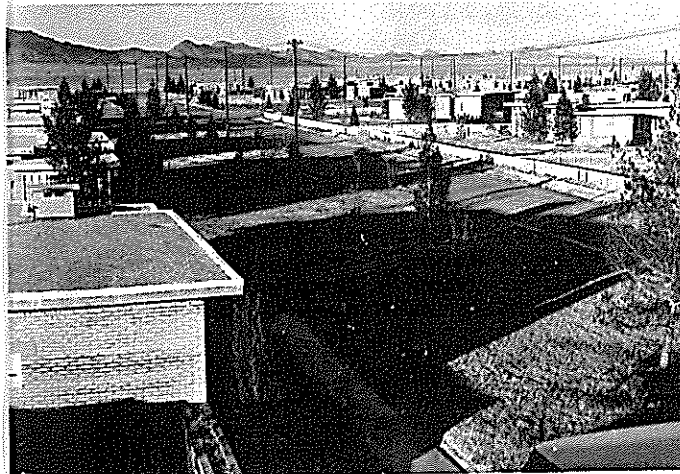
Skirting the main bazaars, the road turns first north and then east where after several miles it divides, the left section going toward Ghazni and Kabul, and the right to the International Airport and on to the Pakistan border about 60 miles away.



THE WESTERN APPROACHES TO KANDAHAR

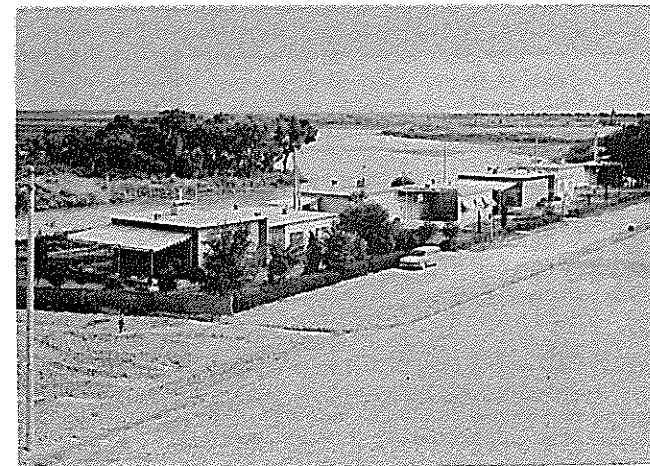
USAID/HAVR activities in Kandahar are centered in an area between these highways which was formerly the base camp for Afghan Highway Constructors (AHC), a private company. Offices, warehouses, residences, a Staff House and an American Embassy Commissary are located in a fenced compound. Bureau of Reclamation offices and those of the Harza Company are in the Manzel-Bagh section of northeast Kandahar, a short distance away, near the Arghandab Valley headquarters of HAVA.

Sixteen houses of two or three-bedroom design and a few apartments are available for families in the Kandahar USAID/HAVR compound. Other residences are obtained, as needed, in the International Airport housing area or in the city.



USAID ACTIVITIES IN KANDAHAR center in an area between two highways east of the city.

HOMES WITH A VIEW of the Helmand River have been built for USAID personnel in Lashkar Gah.



The Kandahar Commissary also serves Lashkar Gah residents and supplies are delivered there by truck once each week. Mail, brought daily from Kabul to Kandahar for the two communities, is dispatched to the Helmand Valley post each evening by car.

Arriving and departing personnel get their first view and impressions of the Valley and say their last good-byes at Kandahar. Air and surface freight shipments clear customs there.

USAID Staff Houses in both Lashkar Gah and Kandahar accommodate travellers and provide temporary housing for new arrivals. In addition to serving as hotel and restaurant, the Staff House is the community center and occasionally movie theatre or church.

American schools in both Valley communities provide education through eighth grade level for resident children. Teaching positions are often filled by qualified wives and mothers. High school students attend American International School of Kabul (AISK) or choose a school in India, Turkey or Lebanon.

An American medical doctor, under State Department contract, attends to the health needs of the two communities. Assisting in dispensaries or clinics are registered nurses, recruited from among resident families. When hospitalization is required the patient is sent to Kabul.

USAID, contract teams, and the Government of Afghanistan employ a number of Filipino engineers and technicians as well as Indian personnel. They and their families comprise a large percentage of the population known as Third Country Nationals. U.S. Peace Corps Volunteers teach in Afghan schools and hospitals. United Nations education and health advisers and associates of a literacy foundation also have been using their talents and energies in the Valley. The spirit of cooperation and harmony displayed by these many nationalities and personalities working together to help Afghanistan is a credit to them as individuals and to the countries they represent.

The challenge of accepting and being accepted for an assignment in the Helmand-Arghandab Valley is a valuable experience for most Americans. Generally they look forward to returning for a second tour in this nation where so much has been accomplished and yet so much remains to be done.



## IX. Today's Targets: Tomorrow's Triumphs

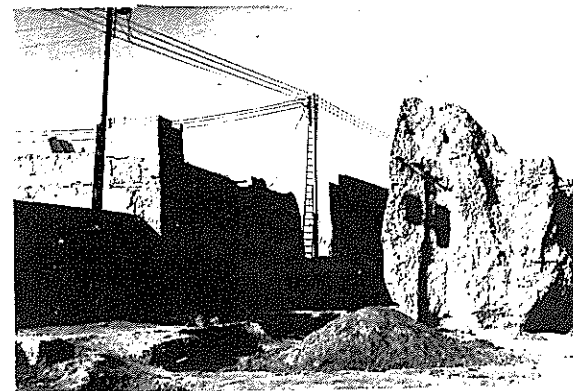
Additional funds for expansion of electrical power facilities, land development and completion of the Helmand-Arghandab Valley irrigation systems have been made available by \$16.6 million in U.S. loans approved in mid-1967.

The allocation of a \$12 million loan for Kajakai electric power will finance the first stages of a \$15.5 million complex slated for completion in five years. A \$4.6 million loan will provide the equipment for land and irrigation development in the Shamalan district.

The plan for expanding power calls for installation of two 16,500 KW electrical generating units at Kajakai Dam and substructure for a third unit of the same size. This construction will make use of the power tunnel which was included in the original building of the dam. High voltage transmission lines will extend from Kajakai to Kandahar; and Girishk to Lashkar Gah with substations to be erected at these load centers.

HACU, with Harza engineering designs and recommendations, is already rehabilitating the electrical distribution lines that have been in use since 1959.

KAJAKAI DAM, which serves as a storage reservoir for Helmand Valley irrigation water, is also a potential source of abundant electrical power for industry.



NEW ELECTRICAL LINES overshadow the ancient wall in the city of Kandahar.

To meet the increasing demands for electricity, an additional U.S. loan of \$800,000 is financing supplementary diesel units at Kandahar. These will be used in the interim period before the Kajakai project becomes operational.

Power surveys and electrification plans, financed by U.S. grants in prior years, recommended establishment of a separate HAVA power division to accept responsibility for generation and delivery of power. The establishment of companies at Boghra and Kandahar to buy power and distribute it to consumers also was advised. A training program for personnel who will operate and maintain all these related facilities would be instituted.

A five-year program under which the Kajakai system could be constructed and placed in operation has been formulated. At the end of this period, management would revert to Kandahar and Boghra Electric Distributing branches operating under the Afghanistan Electric Authority and the Ministry of Mines and Industries.

HAVA foresees accelerated industrial development in the region when power becomes plentiful. The processing of agricultural products or the manufacture of materials needed in developing agriculture is considered basic to the future economic growth of the Valley.



DRAINAGE for fruit producing areas near Kandahar is provided by HACU equipment and work crew.

The production of commercial fertilizer, with a ready market on Valley farms, is a potential industry. Other possibilities include a wool scouring plant, meat processing plant, textile mill, insecticide manufacture from geraniums, and the production of building materials, implements and tools. Government financing as an aid and encouragement to private enterprises has been suggested by HAVA.

Long range plans for Kajakai include construction of spillway gates to raise the level of the reservoir; installation of the third 16,500 KW unit some years after completion of the first stage of development and subsequent installation of four 25,000 KW units, as the need justifies enlargement of the system, to an eventual 150,000 KW capacity.

Completion of the Helmand-Arghandab irrigation systems, development of land areas that now lack farm laterals and drainage canals, and preparation of these acres for more efficient cultivation, will be made possible by the new \$4.6 million loan.



IRRIGATION ON HELMAND VALLEY FARM

These funds will be used to rehabilitate HACU construction equipment; procure new machinery, spare parts, materials and supplies. Technical, supervisory and training services, to be provided over a two-year period under terms of the loan, will prepare HACU personnel for the intensive work schedule ahead. Operations will be geared for 5,000 to 7,000 acres of land per year.

Land development planning studies, necessary before actual work could begin, have been completed for the Shamalan district on the Helmand River. These studies, conducted by the U.S. Bureau of Reclamation, were requested by the RGA and USAID in order to meet requirements of the U.S. Foreign Aid Appropriations Act of 1963 and provide a basis on which future U.S. loans might be considered. This legislation (and all subsequent appropriation measures) required that standards and criteria used for water and land reclamation programs within the United States also be used for programs receiving U.S. assistance in other countries.



NEW VINEYARDS to replace those destroyed by high water tables are being planted by Arghandab area farmers as soon as HACU crews complete sections of the drainage ditch south of Kandahar.

The Shamalan, situated along an alluvial plain on the west bank of the Helmand, begins above five miles from Lashkar Gah and extends 37 miles downstream. It was given priority for development after this area was determined to hold the most promising potential for quick economics returns.

Surveys show a favorable benefit-to-cost ratio for the 62,600 acre tract which has 31,400 acres classified as irrigable. If these benefits are to be realized, the planning studies point out that several essential requirements must be met. They are: (1) construction completion; (2) efficient operation and maintenance of the project; (3) a modern agricultural system replacing subsistence level farming with commercial, mechanized operations.

Construction plans call for mechanized equipment to level, smooth and shape the land to conform to the water distribution, drainage and road designs for the district. Fields are to be plotted in sufficient size for the future use of farm machinery and more efficient irrigation techniques than are presently practiced. The cadastral survey being made in the Shamalan is expected to promote exchanges of land so that fragmented holdings will become consolidated blocks more suitable for large scale farming operations.

Roads suitable for vehicular traffic will soon be essential for farm-to-market transportation and plans for their location have been made. Service roads in the irrigation district which have been plotted at intervals of one to two miles will ultimately insure that no farmer will be far from a suitable travel route.

Deep wells will eventually replace irrigation canals and drains as sources of domestic water for farms. This will not only supply safer water for human consumption but will eliminate many problems of drainage, canal cleaning and maintenance.

An improved agricultural program, the final condition on which success of the Shamalan project will depend, is to be introduced as soon as the physical preparation of the land is completed. If modern techniques and farming practices are accepted, maximum production from the newly developed land can ultimately be achieved.

HAVA will concentrate on the development of better lands in other districts as soon as work in the Shamalan is completed, progressing throughout the Helmand-Arghandab Valley.

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