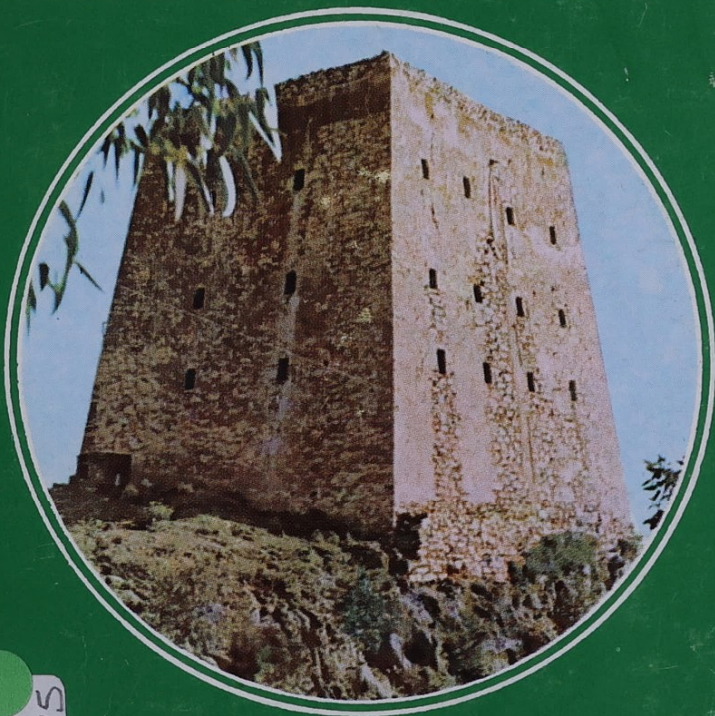


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MINISTRY OF  
INFORMATION

# The Wadi Abha Dam



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And An Outline About  
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MINISTRY OF INFORMATION

# *The Wadi Abha Dam*

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# *An Outline About Assir*

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MINISTRY OF INFORMATION

The Wadi Abba Dam

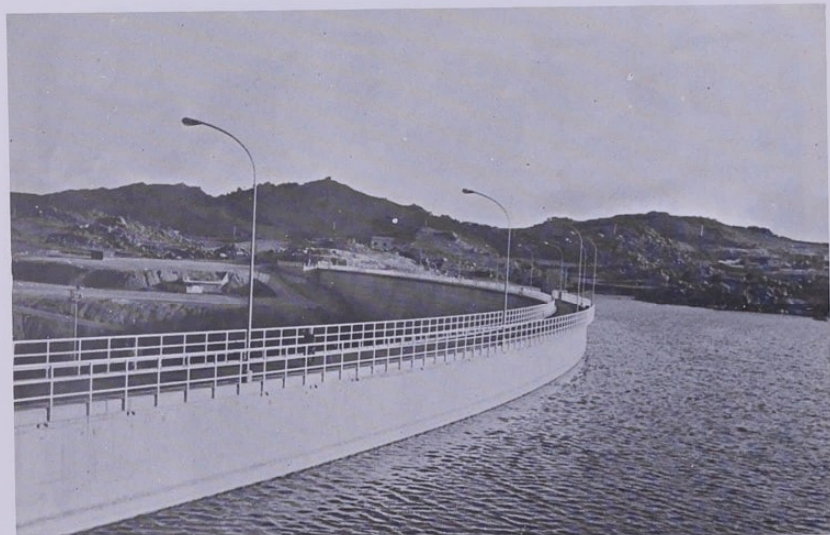
An Outline About Aziz



HIS MAJESTY KING KHALED BEN ABDUL 'AZIZ



**H.R.H. Amir Fahd Ben Abdul 'Aziz, Crown Prince & Deputy Premier  
Inaugurating the dam.**



A side view of the Dam



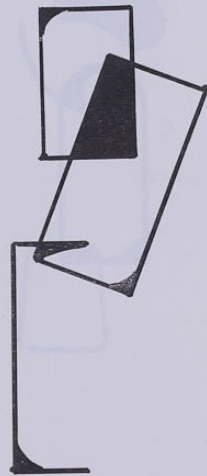
Their Highnesses & Excellencies at the inauguration ceremony



Some of the ministers and high officials who attended the inauguration ceremony



His Excellency the former Minister of Agriculture delivering his speech at the inauguration ceremony.



For many years, Saudi Arabia has seen progress and development extend to all sectors of activity. Sparing no effort and making use of all available resources, the government endeavours to modernize the country, applying, in the process, the latest scientific methods. Education achieved tremendous progress in quality as well as in quantity. The number of students, schools and universities increased considerably. Thousands of kilometers of roads were built to connect cities and villages across the Arabian Peninsula as far as the Arabian Gulf to the east, the Red Sea to the west, the Jordanian and Iraqi frontiers to the north and the frontiers of Yemen and Hadramaut to the south.

Besides these achievements and scores of other projects under execution, or at the study stage, the agricultural sector has been given particular attention by His Majesty's government which aimed at ensuring the supply of water from various sources including artisan wells, sea water desalination (from the Arabian Gulf and

the Red Sea) and the construction of dams in order to store water and control its flow for the best possible exploitation.



## ASSIR REGION

&

## DEVELOPMENT PLANS



ASSIR REGION  
&  
DEVELOPMENT PLANS

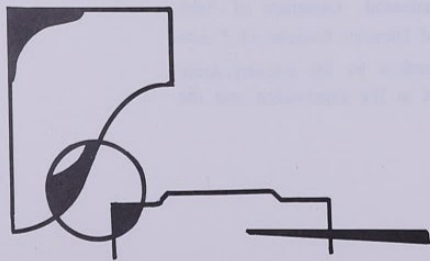
**ASSIR Region and Development Plans**

Like other regions of the kingdom, the Assir region enjoys the prosperity and the progress which His Majesty's government has set itself on achieving for the inhabitants of the cities as well as for the rural dwellers. Therefore it is quite natural that the region is getting its due share of attention on the part of the government and is making headway in every field. Ever since his nomination as Governor of the Assir region, H.R.H. Amir Khaled Al Faisal Ben Abdul Aziz has been personally following-up the execution of the projects earmarked for the region within the development plan, in coordination with various ministries and government departments.

His Highness, who is a graduate from an American University, has been nominated Governor of Assir after having held the post of Director General of Youth Department. Out of dedication to his country, Amir Khaled has involved himself in the supervision and the



Al Sawda road at Abha



ABHA



Assir Mountains — Cultivated fields

follow-up of the government projects in the region of Assir, which is one of the most beautiful regions of Saudi Arabia. Projects recently achieved include the following:

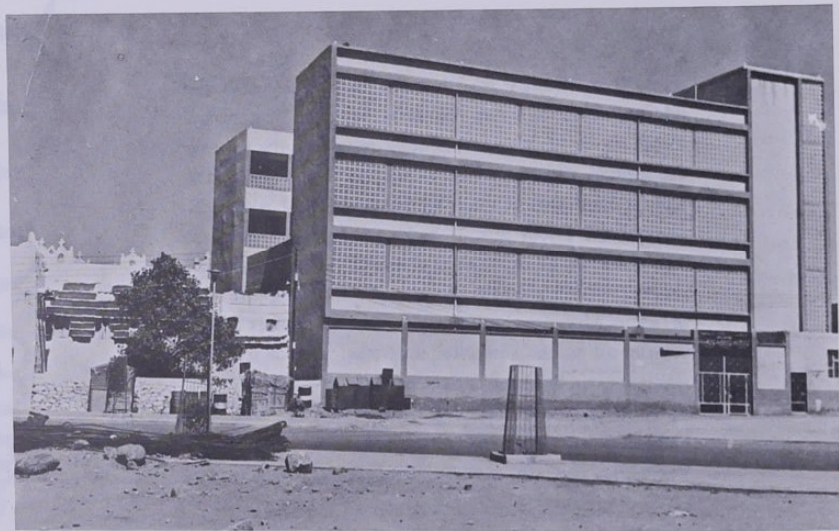


Al Sawda road at Abha

ADMINISTRATION OF  
EDUCATION  
PROJECTS

The Ministry of Education has implemented the adopted education policy with great success. With regard to the region of Assir and in order to achieve the aims of the general plan, the Ministry boosted the administrative and technical staff of the educational sector. 47 additional administrative jobs and 31 technical ones were created. The staff of the administration of education was reorganized on the lines of the new regulations now being implemented in seven educational districts. The main factors which contributed to the successful implementation of the new regulations on one hand and the achievement of the adopted goals on the other, has been the launching of local and external training programmes for the benefit of a considerable number of the administrative and technical staff.





A school at Abha



Assir Mountains — Al Sawda

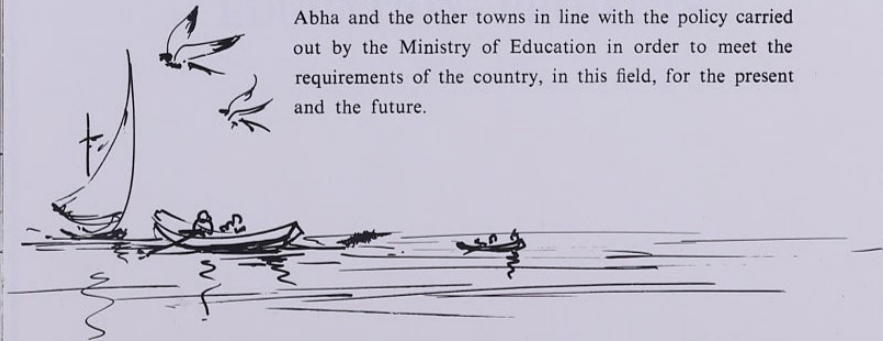


A street at Abha

One of the main methods adopted by the Ministry to develop education and raise its level in schools and cultural centres has been the expansion in building modern schools, supplied with educational aids, laboratories and the necessary equipment. School books are provided free together with transportation, for the students.

Recently six intermediate schools were opened in various parts of the region of Assir together with 17 elementary schools. One secondary school has been opened in Sarat Oubedia. In Abha itself a teachers institute was created. Eight schools have been built in various districts of Assir.

Besides, a great number of elementary, intermediate and secondary schools are now under construction in Abha and the other towns in line with the policy carried out by the Ministry of Education in order to meet the requirements of the country, in this field, for the present and the future.

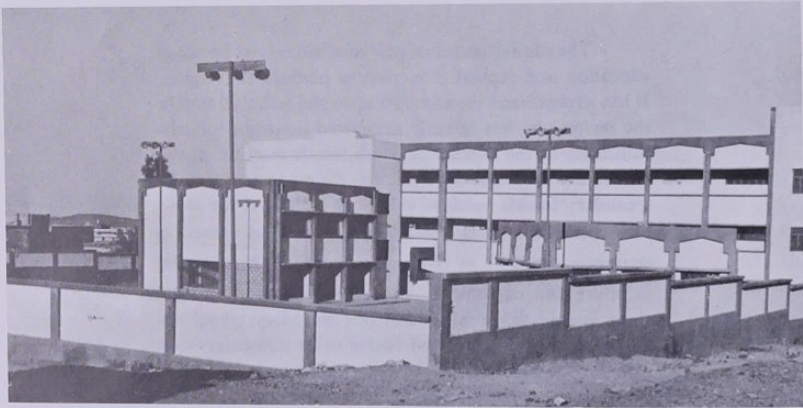


ADMINISTRATION  
OF GIRLS  
EDUCATION PROJECTS



ADMINISTRATION  
OF GIRLS  
EDUCATION PROJECTS

The administration of girls education aims to develop education and expand it in various parts of the region. It has strengthened the administrative and technical staff in the region and has recently completed a scheme of self-sufficiency in the number of Saudi female teachers at the elementary stage. All these teachers are graduates from the secondary female teachers school at Abha. At the same time, the administration of girls education has opened 24 elementary schools in Assir, supplied with the necessary furniture and equipment. Six other elementary schools, three intermediate schools and one secondary school are due to be opened soon and twelve other elementary and intermediate schools are now under construction, each with a number of classes ranging between 9 and 23.



A school building at Abha

AGRICULTURAL  
DEVELOPMENT IN  
ASSIR REGION

### **Agricultural Development in Assir**

In its issue of 22.9.1394 (September 1974), *Al Bilad* daily carried a report by the Saudi Press Agency according to which the administration of agriculture and water affairs had put up a comprehensive scheme of action to develop agriculture and water resources in Assir. H.R.H. Amir Khaled, Governor of the region approved the scheme and exhorted the people in charge of agricultural affairs to double their efforts in order to increase the agricultural production level

Speaking of the new projects in the region, the director of agriculture and water affairs indicated that 13 water projects were foreseen, 4 of them being study projects, and the rest implementation ones.

For the requirements of veterinary preventive immunisation, the region had been subdivided into six districts.





The general plan of agricultural development in the region aims at increasing the income of the farmers by encouraging the introduction of modern agricultural methods, fighting agricultural diseases and pests, ameliorating the irrigation techniques and establishing agricultural cycles.

Technicians and experts from the Ministry of Agriculture and Water assist the farmers, providing them with advice and supervising their activities. They furnish them with field services of a technical nature.



He also said there was a number of other water projects representing a total expenditure of 23 million riyals. For agricultural development itself, fifteen million riyals were allocated. The director pointed out the existence of a scheme to supply the city of Abha with water from various sources (dams and wells). The agricultural affairs units have seen their staffs boosted by the addition of new technical jobs.

Developing water resources is a second aim of the general plan which seeks to insure the supply of water required for consumption and agricultural needs as well by putting to use all available water resources.

The achievements made in this particular field during the past year include:

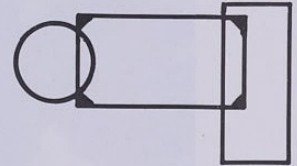
The completion of the big Abha Dam

The installation of two pumping units on Khashram Well at Namass and a third unit on Al Alsidami well.

The lease of two privately-owned wells to supply Abha with drinking water.

In the field of agriculture, a vast program of assistance and services has been launched. Agricultural experts and technicians have carried out regular visits to about 288 villages and hamlets where they provided advice to the farmers on the techniques of planting and the use of fertilizers. They also took part in operations of trees and vegetables planting, grafting and trimming, the regularization of irrigation and the adoption of seasonal agricultural cycles.

Experts in the fight against agricultural diseases have, in the meantime, handled 2250 donums of land and the veterinary orientation department has supplied its services in the field of treatment and immunization.





#### **The tree nursery and the Apiary**

In the course of one year (1973), the nursery produced 26,976 fruit-tree slips and 90,000 various leguminous plants. 11,453 of these slips were distributed to the farmers in the region. Another 1300 forest tree slips were put on sale.

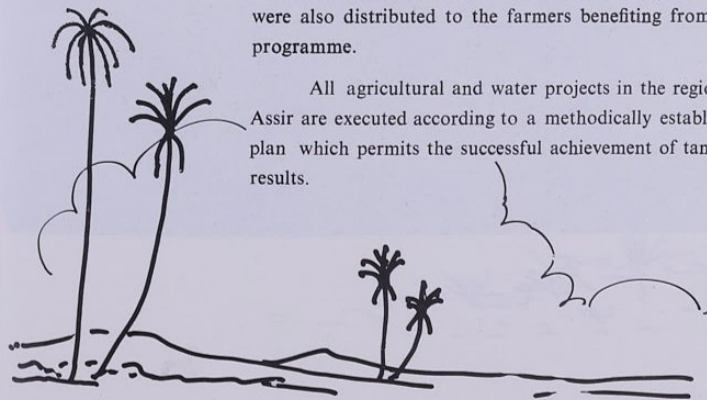
The agriculture experts pay regular visits to local bee-keepers to whom they have supplied a number of modern hives together with 630 frames for existing beehives.



### The wheat and barley project

In collaboration with the F.A.O., the Ministry of Agriculture and Water undertakes a project for the development and expansion of wheat and barley culture in Abha, Al Sawda and Raghada. This project aims in particular at selecting the best strains of grain which can adapt to the local conditions of irrigation either from wells or from rainwater. Experiments have shown that the average production of wheat from local strains is 121.14 Kgs. per dunum; whereas the average production per dunum of Mexican wheat strains reaches 329.60 Kgs. Consequently administration of agricultural affairs undertook to distribute 4 tons of grain seeds of the Mexican strain to the farmers in order to substitute this high yield selected strain for the local seeds. At the same time, fertilizers were also distributed to the farmers benefiting from this programme.

All agricultural and water projects in the region of Assir are executed according to a methodically established plan which permits the successful achievement of tangible results.





**THE TOWN**  
**PLANNING &**  
**TECHNICAL AFFAIRS**  
**ADMINISTRATION**



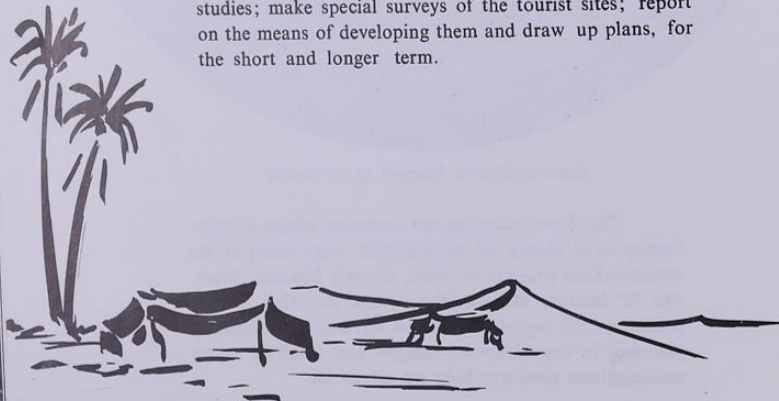


**Cultivated Area Scenery at Al Sawda**

The Town planning and technical affairs administration is in charge of the technical supervision of the municipalities projects at Abha, Khamis Mushait, Dhahran Al' Janoub, Mahaid Namoss and the other municipalities of the region. It carries out also the necessary planning in the numerous villages and localities where municipalities have not been set up so far.

In 1393 (1973) this administration completed a master plan for the city of Abha and made the necessary plans for the government departments offices in Khamis Mushait. It also revived the existing plans for certain regions and has undertaken other jobs falling in its line of activity. Currently, work is going on to complete the drawing-up of the final version of the rainwater drainage and sewage system projects at Abha and Khamis Mushait.

It is to be noted that the Ministry of Municipal and Rural Affairs has engaged the services of an international specialized firm to carry out detailed planning studies; make special surveys of the tourist sites; report on the means of developing them and draw up plans, for the short and longer term.

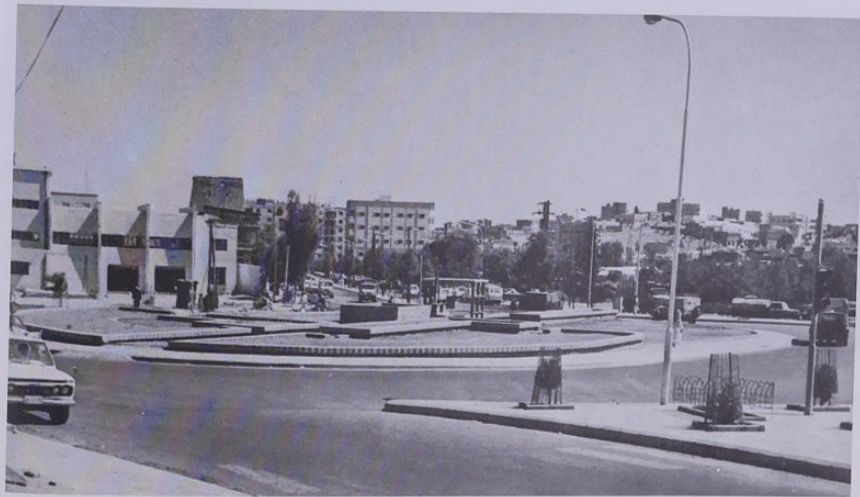


## MUNICIPALITY PROJECTS

### **Municipality projects**

The municipality of Abha, in collaboration with the administration of town planning and technical affairs, undertakes the necessary studies for municipal projects; control of sanitary services in the markets and public establishments; supervises cleaning and maintenance of streets and public parks, and is in charge of power net-works and illumination. The staff of the municipality has been boosted recently by the creation of 8 additional technical and administrative jobs which have contributed to raise the standards of municipal services. At the same time, the municipality has acquired a number of vehicles of various types at a total cost of 600,000 riyals.

The municipality projects in Abha are numerous and they are being executed in succession. The same is being done at Khamis Mushait and other municipalities of the region of Assir, which incorporates the following cities and localities:—



**A Square At Abha**



A village in the Abha Region



1. The city of Abha: chief town of the Province. located on mountainous slopes around valleys, this town is among the most beautiful in Saudi Arabia. It contains the Governorate Headquarters; its houses are scattered on hill and valley sides. The average altitude of city is 6000 feet above sea level; however some of the suburbs, specially Al Sauda and Tahlal reach 9000 feet of altitude.



Upper Mahala



Lower Mahala

2. The localities of — (2) Bareq (3) Balahmar (4) Balsumar (5) Bani Amir (6) Tathlith (7) Tannouma, (8) Tihamat Balsmar Wa Balahmar (9) Al Joud (10) Al Harja (11) Khamis Mushait (12) Rak (13) Rijal Alma' (14) Rafida (15) Sarat Obeida (16) Al Sha'af (17) Tarif (18) Dhahran Al Janoub (19) Al Arine (20) Al Ain (21) Al Farsha (22) Al Ftaima (23) Al Faidh (24) Qama Walbahr (25) Al Majasda (26) Mahael (27) Al Mazlonta (28) Al Mardha (29) Al Namass (30) Wadi Ben Hashbol (31) Al Wahaen (32) Hijrat Zouhair (33) Ya'ara.

### THE WADI ABHA DAM

This dam was built in order to store water and make it available to the city of Abha in line with the water development policy adopted by His Majesty's Government. The dam is located at the northern end of Abha

The contract for the dam's construction was concluded on the 24th of Sha'ban 1391 (14.10.1971). During the first months, experts from the Ministry of Agriculture and Water supervised execution, later this task was entrusted to a consulting firm. The dam was inaugurated during the month of Rabi al Awal 1394 (1974) under the auspices of H. R. H. Crown Prince Fahd Ben Abdul Aziz, deputy prime minister.

## THE MAIN ELEMENTS OF THE PROJECT

### 1. The main dam

Built of concrete, the dam has a length of 350 meters 35 blocks of 14 meters each, and a height of 33 meters. Maximum water retaining capacity of its lake at its highest level which is 2200 above sea level, is 2.13 million cubic meters. The road spanning the crest of the dam is at 2203.06 m above sea level.

A control room runs through the dam from end to end.

Water flows from the lake to the filtering reservoir located in front of the five main blocks in the center of the dam. Within one of these blocks is the pumping tower out of which water flows to the discharge room connected to the Abha water project presently under construction.



Crowds celebrating the inauguration of the dam



**B. Water drainage.**

For water evacuation, there is an opening at the base of the dam with a discharge capacity of 21.9 cubic meters per second.

This opening is provided with sliding gates which are normally closed up. In order to relieve the pressure of the out-going water, a reservoir has been built at the end of the discharge canal to slow down the evacuation flow.



Agricultural Project at Al Sawda Avenue

#### C. Discharge of excess water

In order to insure the drainage of flood water from Wadi Abha, a 131 meters drainage canal has been built at an altitude of 2200 meters above sea level.

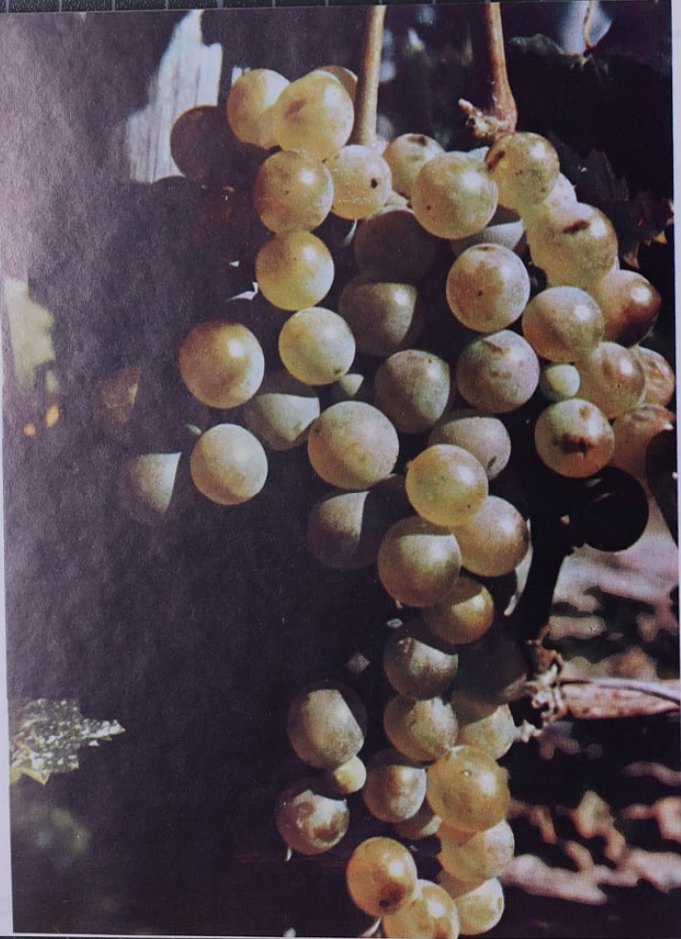
The excess water flows into a discharge canal of 686 meters in length, with a capacity of 280 meters per second. Through this canal, the water finds its way back to the valley of Abha, up stream of the dam.

## FUTURE PROSPECTS

It is estimated and planned that in 1400, Abha will have a population of 43,000 people. At the rate of 100 litres of daily water consumption per head, the required volume of water would be 4,300 cubic meters per day.

The Abha dam would not be sufficient to meet such requirements as it is not even supplying the present needs of the city at a time when its population stands at 34,000 inhabitants. Since the valley of Abha is not among the big wadis of Saudi Arabia and since the hydrological surveys carried out through a period of five years extending from 1963 to 1968 have established that its floods do not take place regularly, but happen once every two years a half approximately, it became apparent that even by reducing consumption to 1700 cubic meters daily there has been a period of six months during which the lake was completely dry. The results of the surveys demonstrated that the dam could supply Abha with water for five out of six consecutive years. In order to balance the supplies with the requirements, the government intends to bring water by pipelines from the numerous shallow wells which abound in the vicinity of Abha at a distance averaging 20 Kms. For longer term needs and in order to meet the population increase requirements, it is planned to build some additional dams in the valleys surrounding Abha.





## FACTS AND STATISTICS

1. **Duration and cost of execution.**
  - . Date of the contract conclusion 24.8.1391 (14.10.1971)
  - . Date of the project completion 2.3.1394 (25.3.1974)
  - . Construction costs 29 million Riyals
2. **Hydrologic Characteristics**
  - . Average rainfall 370 mm.
  - . Maximum rainfall 833 mm.
  - . Area of the dam water 58.5 Km<sup>2</sup>.
  - . Storage land
  - . Area percentage of artificial inclination 25 %
  - . Maximum water flow speed in Wadi Abha 137 cubic meters per second
  - . Maximum water flow speed in Qassim 280 m<sup>3</sup> per second
  - . Annual evaporation of the lake water 1,96 m.
3. **The Dam and the lake**
  - . Length at the crest 350 m.
  - . Height of the dam 33 m.
  - . Width of the road on the crest of the dam 3,50 m.
  - . Altitude of the middle point of the road 2203,6 m above sea level.
  - . Highest level of water storage 2200 m above sea level
  - . Maximum water storage depth 22,50 m.

- . Lake's area at maximum storage 0,286 Km<sup>2</sup>.
- . Volume of water at maximum storage 2,13 million m<sup>3</sup>
- . Volume of concrete used in the construction 72.500 m<sup>3</sup> of the dam

#### 4. Water Drainage

- . Number of openings One
- . Maximum drainage capacity at maximum storage 21.9 m<sup>3</sup> per second.
- . Watergates types One sliding, One on wheels measuring 1.15 x 1.10m

#### 5. Excess flood water drainage canal

- . Length at the crest 131 m.
- . Altitude of upper part 2200 m above sea level.

#### 6. Flood water discharge canal

- . Total length 686 m.
- . Maximum distance reached by canal 290 m.
- . Discharge capacity 280 m<sup>3</sup> per second.

## DRINKING WATER PROJECTS IN THE REGION OF ASSIR

Drinking water projects in the Region of Assir. The Ministry of Agriculture and water is carrying out a number of drinking water projects in the area. Some of which are on the current budget for the fiscal year 1394-1395. These include the following:

1. Abha water project which will be fed by water stored at the Wadi Abha Dam.
2. Khamis Mushait water project which figures on the budget of the current fiscal year.

There is also a number of other drinking water projects among which:

- a) A drinking water project for the town of Bariq.
- b) A drinking water project for the two villages of Qibal and Qasim at Namoss.
- c) A similar project for the town of Beni Thouma
- d) A water project for Al Mustawa Darjan.

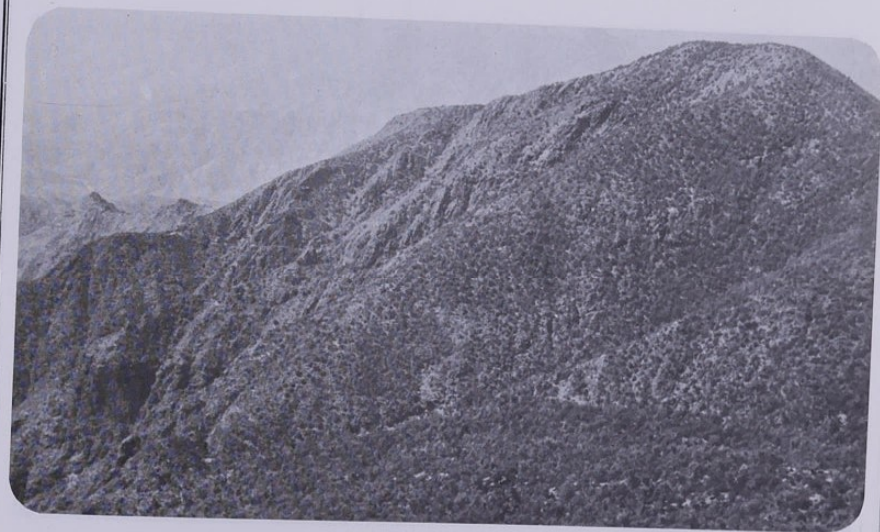
DRINKING WATER SUPPLY  
IN THE REGION OF AFRICA

Drinking water supply is a problem of increasing importance in the region of Africa. The population is increasing rapidly and the demand for water is increasing accordingly. The water supply is inadequate in many areas and the quality is often poor. The following are some of the main problems:

1. Lack of adequate water supply.
2. Poor quality of water.
3. Contamination of water.
4. Lack of adequate water supply.
5. Poor quality of water.
6. Contamination of water.

THE DEVELOPMENT  
IN PICTURES

THE DEVELOPMENT  
IN PICTURES



Abha mountains



Ancient building at Abha



Abha town



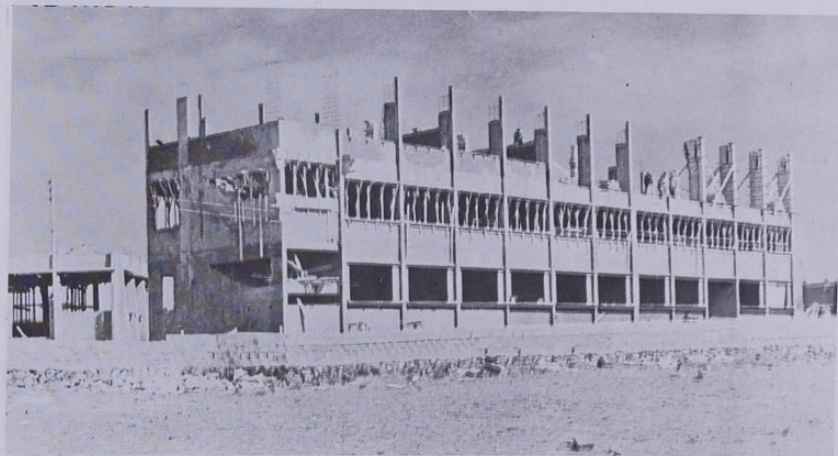
A valley at Abha



A street in Abha



A general view of Abha town



Building of a modern primary school at Abha

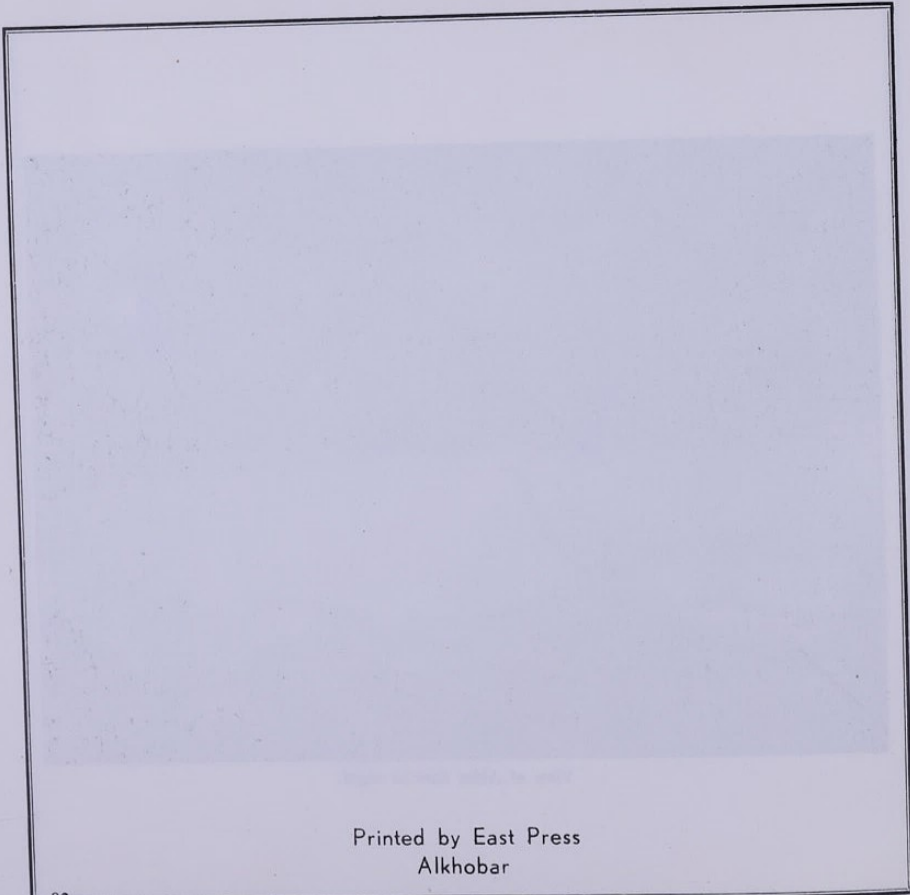


Building & paving roads



View of Abha dam at night.





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