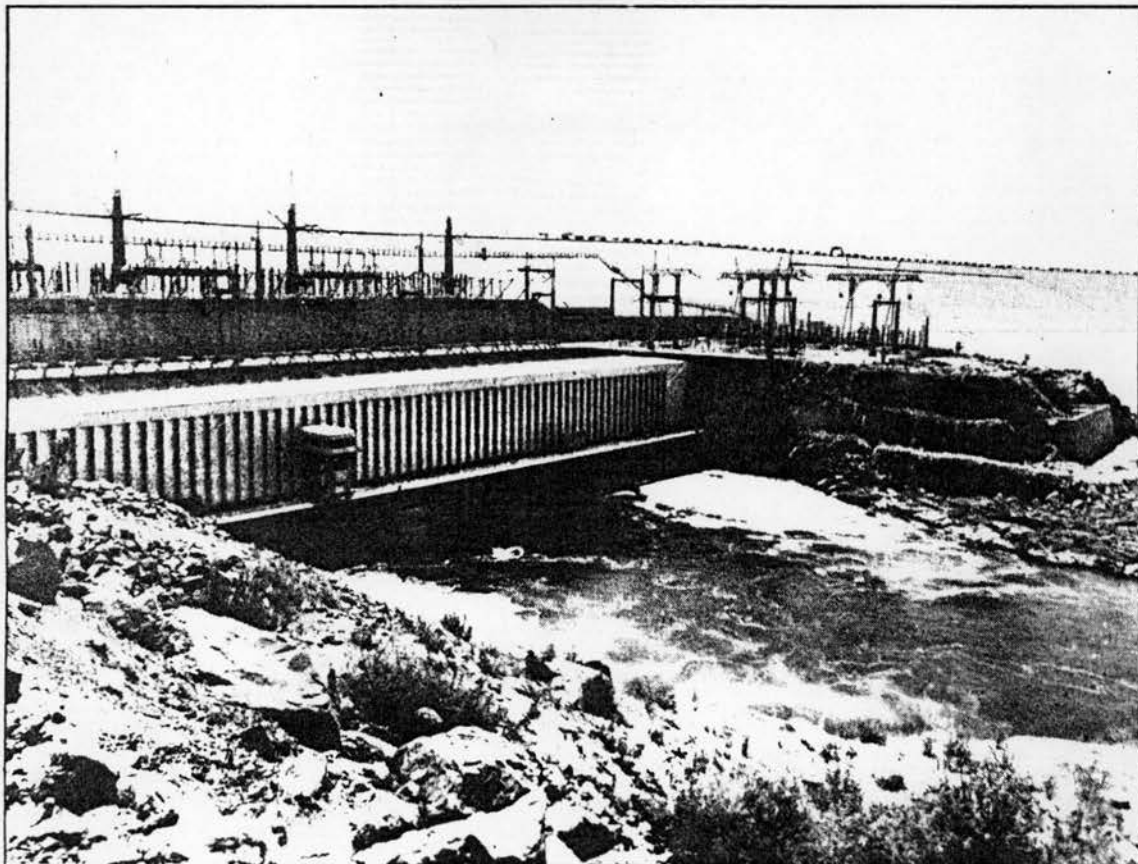


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A Face-lift for the High Dam



The hydroelectric power-station at the Aswan High Dam.

By Ahmed Lutfy
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CAIRO - Egyptian and American officials gathered quietly last week opposite the Sheppard's Hotel to celebrate the arrival of a barge from Alexandria. On board was the first of 12 new turbine runners for the High Dam at Aswan.

The ceremony was simple. But the occasion was significant for Egyptian-American relations.

The barge transporting the runner left Alexandria on 5 May and is due to be at the dam site by the end of the month to mark the success of a \$100 million effort to modernize and renew the powerstation at the High Dam. Installation of the first runner will take three months, according to American embassy officials.

In 1970, after nearly 13 years of operation, the dam's powerstation was in serious trouble when the government turned to the United States for help in the repair and rehabilitation of the turbines.

The shift to American technology came after problems began to plague the hydroelectric plant when cracks appeared in the runners of the 12 turbines. The 3.6-metre high, 135-ton runners are the rotating parts of the turbine, which are driven by the flow of the water of the Nile and drive the generators which produce electric power.

Early in the 1960s, the Soviet Union helped to build the High

Dam, fulfilling an age-old dream of Egyptians to control the Nile's floodwaters. For thousands of years, life in the valley of the Nile was a struggle between desert and agricultural land.

The struggle was a bitter one. One year the flood would come and sweep away the people, the animals and houses, the next year there would be no water and the desert would creep up to destroy both humans and land.

When the High Dam was completed in 1967 there was general applause - and accolades for the Soviets who, in what surely must stand as one of the most adroit public relations ventures of all time, had helped bring this vicious cycle to an end.

The High Dam allowed a constant, year-round flow of river water to the delta, vital for agriculture. The turbines provided vast new sources of hydroelectric power. Two years into operation, however, cracks appeared in the runners of the turbines. Engineers were forced to put a number of runners out of service, which meant a reduction in generating capacity of electric power.

Efforts to correct cracking of the turbine blades were unsuccessful, and in 1980 a team of American experts announced that a failure of the turbine runners was possible at any time. Experts concluded the cracks had appeared as a result of

faulty design. That was when the United States stepped in, and in 1981 Washington agreed to finance the replacement of the 12 Russian-designed and manufactured Francis turbine runners.

According to John Hunt, senior officer of energy projects at USAID, the United States agreed to give a grant of \$100 million in 1982 for the replacement of the runners and obsolete electrical equipment. Allis-Chalmers won the contract for \$85 million and began the manufacture of the runners early in 1983.

The runner is a 135-ton stainless steel welded casting, 6.7 metres in diameter, 3.6 metres high. It consists essentially of an upper crown, joined by 14 blades to a bottom ring or band some 2.1 metres below.

The minister of energy, Mager Abaza, praising the benefits over the years of the dam, said last week that the dam had enabled electricity to be made available to about 5,000 villages. Other experts, both in government and out, have pointed out over the past year that the dam has helped forestall starvation that would have resulted from the extremely low level of the Nile after years of drought in Africa.

Mr. Abaza said that when the 12 turbines being assembled now in the United States are completed over the next four years, the efficiency of the plant will increase by 5 percent.