

gerprinted' to understand the mix, flow, origins, and recharge processes," according to the International Atomic Energy Agency.

Hydrologists have mapped the Nubian Aquifer reserves—including with satellite remote sensing as well as test drills, sufficiently to know that, although it is considered a "closed water system," the Aquifer complex of underground lake basins is so vast, and so little used, that it could easily provide supplies in the interim until nuclear-powered desalted seawater came on line.

"Fossil water is simply not renewable. But this doesn't mean that fossil water should be left under the ground. We need to develop and manage it wisely," is the view of the Director of Groundwater for the Egyptian Ministry of Water Resources and Irrigation, Dr. Fatma Abdel Rahman Attia.

The Libyan Project

At present, the "Great Man-Made River" project in Libya (Figure 2) pumps water in the desert, and conveys it through a huge underground pipeline to Tripoli and other Mediterranean coastal population centers. In several Western Egypt desert oasis towns, pumping is supplying newly developed settlements.

Scientific caveats on how to plan to make best use of the groundwater are stressed by Egyptian geologist Dr. Rushdi Said. There is the depth factor. Speaking of western Egypt in a 2003 interview with *EIR*, Dr. Said said, "It's deep, and you need a lot of energy to lift it up out of the ground. So it will make agriculture very expensive. The solution is to use that limited fossil water for a more useful thing—into manufacturing. Use it for industry, rather than agriculture. . . . Just imagine that you will have a deep well of 600 meters below the surface of the Earth—2,000 feet to lift it up."

Dr. Said, who worked on the Libyan "Great River" project, shown in Figure 2, said that he had proposed a counterplan. "My suggestion was, rather than moving it to the North, just keep it there [in southern Libya]. And since you will have farmers from Egypt anyhow coming, bring them to the South. Because it's very expensive to transport that water. . . . The groundwater should be used where it is, and in manufacturing industries. First of all, it's fossil water. Once you get it, you don't replace it."

The recommendation, in Dr. Said's overview, is that there is a mutual interest for a division of labor between regions and countries in northeast Africa, based on resources. Sudan has great agriculture potential—with ample water in southern Sudan—"a beautiful area to develop." Egypt should use the fossil water for industrial development, until nuclear-desalted supplies come on-line. He said that "the best union you can have, is with the Sudan, of course. And that's why, the history of Egypt was tied with the Sudan all the time. The separation of the two countries is bad for the Sudan, and bad for Egypt."

Book Review

Nasser's Geologist: Use Resources; Grow!

by Marcia Merry Baker

Science and Politics in Egypt; A Life's Journey

by Rushdi Said

Cairo and New York: The American University in Cairo Press, 2004

230 pages, hardbound (www.aucpress.com; also available in Arabic), \$24.50

In 2000, on the occasion of his 80th birthday, Egyptian geologist Rushdi Said, who was Director of the Geological Survey of Egypt, and activist on the Industrialization Commission for Gen. Gamal Abdel Nasser, President of Egypt (1954 to 1970), wrote his life story. His direct experience spans the key historic times of modern Egypt, from his birth one year after the attempted revolution for independence, led by the Wafd Party; to the 1936 gaining of limited sovereignty; through the years of World War II; independence in 1954; and events thereafter. Thus, this book—written first in Arabic, and since in English translation—is a fine resource for gaining insight for today's battle to defeat globalization, and restore the world's nations to economy-building, not neo-colonialism and war. In fact, the book includes a "Chronological Table of Events" from 1919 to 1981, for ease of reference.

What Said's firsthand expert account makes vividly clear is that the land, water, and mineral resource base of northeastern Africa is conducive to fabulous development potential for all peoples, given an international climate favoring economic advance among nations, instead of the geopolitical horrors that have been imposed over the past 40 years of "free trade" politics. His development viewpoint in turn spotlights how venal and stupid are those who are currently demanding war and invasion in the name of "helping" Darfur, instead of waging humanitarian relief and economic improvement.

Dr. Said identifies as a high point in his political life, his 12 years participating in the Interparliamentary Union, and his backing for the Non-Aligned Nations Movement. He represented Egypt in the Union, while he served in the Parliament of Egypt from 1964 to 1976; this had special significance, as

he is a Coptic Christian. He was very involved internationally. “The period I spent in the Union was among the most active in its life. During that period, the non-industrialized countries used the Union [founded in 1881, but functioning as a ‘European club’ until after WW II] as a platform to voice their hopes and to mobilize public opinion for their cases.”

For example, during the Spring of 1975, Dr. Said “decided to slate a proposal on the agenda of the council of the Union, which was meeting in Colombo, Sri Lanka, to grant the Palestinian Liberation Organization (PLO) observer status in the Union,” and he undertook other initiatives to try to make tangible gains in the situation for the Palestinians, despite all political odds internationally.

Said worked on many geophysical aspects of natural resources. He literally wrote the book on the Nile River: “The River Nile—Geology, Hydrology and Utilization,” published in 1993, by Pergamon Press. It is still a standard reference text for this part of the Earth. Before that he edited the definitive book, “The Geology of Egypt,” which was first published in 1962; with a new edition published in 1990 by Balkema in The Netherlands.

At periods of preparing this latter work, a new geological map of Egypt was undertaken, involving German scientists from the Technical University of Berlin. Said received an honorary doctorate from that institution, where most recently, he gave a lecture there on the “Desert of Egypt,” in September 2006.

In the preface to his book, Said summed up his last 40 years in this way, “My ventures in science and politics in Egypt took place during the three and a half decades that followed the end of World War II in 1945. These were the years of the Cold War that raged between the two superpowers that emerged after the end of the war. They were years of great tension but also of a relative peace that was maintained by the fear of annihilation that the two superpowers harbored, should the weapons of mass destruction that they had developed and amassed during and immediately after the war be used. During these years there was room for Third World countries to maneuver and to work in a somewhat independent or ‘non-aligned’ way. During the thirty-year period that followed the end of World War II, Egypt made use of this situation and chose the path of non-alignment. It was able to change its landscape and embark on an ambitious program of development. It built the Aswan High Dam that regulated the waters of the Nile and thereby converted Egypt into a modern nation that no longer had to live with the vagaries of the river, fearing the high floods that could inundate its land or the low floods that could cause scarcity in its water supply. It also embarked on an industrialization program that allowed Egypt to have a



Courtesy Rushdi Said/American University of Cairo Press

The Geological Survey team in front of the experimental phosphate mine, Abu Tartur plateau, in the Western Desert of Egypt, 1971. Dr. Said Rushdi is standing, second from right.

diversified economy and to create a cadre of entrepreneurs, managers, engineers, and scientists to manage it. My association with the program enabled me to do things that only my generation can boast of having had the chance to do. In addition to having had the opportunity of building up a new school of research in the university and reorganizing a scientific institution [Geological Survey of Egypt], I planned and supervised the opening of new mines, the laying down of railway lines, the building of a new harbor on the Red Sea, the construction of housing projects, and many other undertakings. This episode of Egypt’s history of non-alignment suffered a blow with the defeat of the Arab armies in the 1967 Arab-Israeli Six Day War. It was terminated altogether after the October 1973 Arab-Israeli War, when the new leadership of Egypt decided to shift course and part from the non-alignment policy. This shift was undertaken in a way that did not benefit Egypt. The 1970s saw the neglect and final dissolution of the industrialization program that Egypt had embarked upon, and the rise of a new class of corrupt beneficiaries. . . .”

Nasser-Era Economic Development

The 1950s-60s Nasser development years Said speaks of, have direct lessons for today. In 1960, “An ambitious industrial five-year plan was launched. The plan included the building of a steel mill, a variety of metallurgical manufacturing, food, fertilizer, and textile industries, and a naval base. At the end of the five years, the gross national product generated from industry exceeded that from agriculture for the first time in the history of Egypt.” Over the ten-year period from 1960 to 1970, the nation went from 10% of its gross national product

connected to industry, to 20%.

During this time, under Dr. Said's directorship of the Geological Survey, the program came to involve 800 scientists and 3,000 employees. They conducted critical surveys and projects throughout the nation, to assay mineral resources and prepare maps. This kind of systematic scientific endeavor, and especially the development of young scientists in the process of the work—a burning objective of Dr. Said—had never been undertaken during British rule. In 1970, Dr. Said started the new scientific periodical, "Annals of the Geological Survey of Egypt."

But the policy of "deliberate development" all ended in the 1970s. Following the death of Nasser in 1970, the Presidency of Anwar Sadat began moving towards the "Open Door" economic policy of foreign privatization and IMF conditionalities began to be imposed. In fact, in the Summer of 1981, Dr. Said himself came to be included on a list of 1,500 personalities to be jailed, including former ministers, leading journalists, and religious leaders. Said therefore remained in the United States, where he had been a visiting faculty member at Southern Methodist University in Texas, and temporarily located near Washington, D.C. Subsequently, in October 1982, his infamous "detainee" status was lifted, under President Hosni Mubarak. But Said had decided to relocate his family to the United States, and thereafter conduct geological consulting work back and forth to Egypt and internationally.

Youth in Science

The accompanying photo illustrates one aspect of Dr. Said's lifelong commitment: He championed the principle that a nation's youth must be raised up in science and culture, to serve the public good. During his time at the Geological Survey, as well as in his classroom teaching, Dr. Said purposely deployed youth to participate in scientific work to gain hands-on experience.

He relates one story in the book that makes the point. In 1969, the Geological Survey undertook a project to map the phosphate deposits in the desert near the Karga Oasis, at Abu Tartur, an extremely difficult place to camp and work.

Finally, Dr. Said one day announced to the team in the desert camp (shown in a 1971 photo), that he was forced to close the expedition, because there was no way of providing enough water for the test drilling operations, without running out a fleet of water tankers, which couldn't be done.

"My words took everybody aback and after a few minutes of silence, one of the young engineers assembled around the table suggested that we could overcome the problem if we were to use drilling machines that could use air rather than water for cooling. When I pointed out that we did not have any of these, he answered that he could convert the existing machines to work with air rather than with water. I thought the matter over for a moment and decided to take the young man's offer seriously. I asked him about his needs to effect this conversion and he said that he would need a place in the

workshop and the freedom to use its tools [of the Geological Survey at home base]. The next morning I took the young man to Cairo in my car. During the ten-hour trip I found out that he had graduated from the faculty of engineering, Cairo, and that his father had a small blacksmith's shop in the district of Subra where he used to work in Summer. Back in Cairo, I provided him with what he asked for. A month later, we had converted two of our machines to work with air rather than with water.

"The spirit of devotion and enthusiasm that was shown by this young man moved me and heightened my interest in the project. . . ."

Vast deposits were discovered, and Dr. Said and a team charted economic development plans, with a possible annual production of 10 millions of tons gross ore (7 million after treatment); he planned for infrastructure, housing, towns, and activities. "I also envisioned the project to have its own railway and port. . . ."

But in the ensuing years, the project was cancelled and abandoned under the anti-development regime forced on nations by the floating-exchange-rate system which followed the end of the Bretton Woods system in 1971. Cartel companies came to dominate which projects proceeded, and which did not. The world now faces the opportunity and necessity to end this domination. Young or old, *Science and Politics in Egypt* will inspire you.

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