

nuclear future on PWR's entailed another far-reaching choice, that of ensuring a dependable supply of enriched uranium to fuel the reactors. The United States was offering enriched uranium at bargain prices, and the Soviet Union also had stocks for sale, invariably at 5 percent less than the going American price. Ignoring these siren voices, France determined to build her own uranium enrichment plant.

Down the Rhone valley from Bugey, about halfway between Lyon and Marseille, the realization of this decision has almost taken final shape. Started in 1972, the \$5.5 billion plant is based on the technology of enrichment by gaseous diffusion which was developed by French scientists for the military enrichment plant at nearby Pierrelatte. The first stages in the Eurodif cascade came into production last year. When complete, in 1981, Eurodif will produce 10,800 tons of separative work units per year, about a quarter of the world production of enriched uranium, and enough to fuel one hundred 1000-megawatt reactors. Built on a gigantic scale, the plant itself requires four 930-megawatt nuclear reactors to fulfill its electrical needs.

Some 1400 stages constitute the cascade which rearranges the isotopic composition of natural uranium. Each stage has a compressor which pumps uranium—converted into gaseous form as uranium hexafluoride—through a fine porous filter. Because the uranium-235 penetrates the filter slightly more rapidly than does uranium-238, the gas at each stage becomes fractionally more enriched in the lighter isotope. The heaviness of the gas, and the speed with which it is pumped round the cascade, dictates pipes of massive thickness and equipped with shock absorbers. Natural uranium, containing 0.7 percent of the fissile uranium-235 isotope, enters the plant; uranium containing 3 percent of uranium-235, and depleted uranium are the outputs.

Eurodif, like Super-Phénix, is a European undertaking under French direction. Cogema, France's state-dominated nuclear materials company, owns 51 percent of Eurodif; the rest belongs to Italian, Belgian, Spanish, and Iranian interests.

A visible triumph of French technology, Eurodif is also a guarantee of independence. Never again will the United States be able to impose political or commercial conditions because of its monopoly of enriched uranium. "The Americans," says the CEA's Goldschmidt, "had started the war of reactor types. . . . They would effectively win

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Soviet Scientist Misses U.S. Parley

The 20th International Conference on High Energy Physics held recently at the University of Wisconsin attracted some 1200 scientists from around the world. A Soviet scientist who was to have had the most prestigious place on the program, however, did not show up.

No one is certain just what happened to Lev Okun, a leading Soviet scientist from the Moscow-based Institute of Theoretical and Experimental Physics. But his absence is believed to be politically inspired and has fueled speculation that the 1984 conference site, which was scheduled for the Soviet Union, might be moved to another country.

Prior to the conference, Okun had received permission from the Soviet authorities to attend. He had a visa and airline and hotel reservations, and had prepared notes for a speech that was to have been given on 23 July, the last day of the 6-day conference. When the 17 other members of the Soviet delegation arrived, however, they would say only that Okun had not boarded the airplane with them in Moscow.

Okun is a friend of dissident Soviet scientist Andrei Sakharov, but does not have a reputation for agitating Soviet authorities. According to conference organizers, Okun may at the last minute have been denied permission to travel because the conference had received several papers by Sakharov, a Nobel Peace Prize winner now living in exile in Gorky. Sakharov's papers, and an apology that some of his references were not complete because he is denied access to a library, had been smuggled out of the Soviet Union by persons connected with the International Zionist movement. Okun is believed to be Jewish.

Organizers of the conference sent a telegram, signed by 800 of the attending scientists, to the president of the Soviet Academy of Sciences protesting Okun's absence. Other actions are in the offing. At the 1978 annual conference, the sponsoring International Union of Pure and Applied Physics adopted a resolution that questioned whether the 1984 conference should be held in the Soviet

Union if the absence of invited Soviet speakers continued at other meetings. In light of Okun's absence, conference organizers at the University of Wisconsin said that such a boycott was now becoming a distinct possibility. Lee Pondrom, a conference co-chairman, noted that if the commission decided to change the 1984 site it would punish Soviet scientists who have no control over the situation. "But in some sense it would also punish the Soviet state," he said. "It is a situation similar to the Olympic boycott."

Jordanian Accused of Plagiarism Quits Job

In the wake of accusations that he pirated 5 of his 60 published scientific papers, Elias A. K. Alsabti, 25, has resigned from an internal medicine residency program at the University of Virginia.

The resignation came on 2 July as administrators were convening a panel to investigate charges of plagiarism made by three groups of researchers (*Science*, 27 June). Since the resignation, journals that originally printed two of the papers have announced they will publish retractions. In a related development, a separate group of researchers in England has accused Alsabti of pirating an additional two papers—raising the number of papers under fire from five to seven.

Alsabti, who carries a Jordanian passport, went to the University of Virginia program in Roanoke after graduating in May 1980 from the American University of the Caribbean in Montserrat, the British West Indies, with an M.D. degree. While in Virginia, Alsabti denied having pirated the papers and threatened to sue anyone making such allegations (*Science*, 11 July). A few days later he resigned, having failed to answer tentative questions put forward by administrators at the University of Virginia concerning the charges of plagiarism. Officials said the panel would not pursue the matter further.

Retraction of one Alsabti paper is in the offing, according to Daniel Wierda, one of the researchers who had his work pirated by Alsabti. Wierda's paper appeared under his own name in

the *European Journal of Cancer* (15, 1013, 1979) and under Alsabti's name in the *Japanese Journal of Medical Science and Biology* (32, 53, 1979). When Wierda became aware of Alsabti's plagiarism, he wrote to the editor of the Japanese journal and presented evidence that he had indeed done the work. Owing to these documents and the subsequent discussion of the Alsabti affair in the international press, the editor of the Japanese journal, Akira Shishido, recently wrote to Wierda to inform him that a retraction of the Alsabti article will be published in the August issue of the journal.

Another retraction is close at hand, according to E. Frederick Wheelock, who also had his work lifted by Alsabti. A grant application and several manuscripts written by Wheelock were turned into three separate review articles signed by Alsabti, who had worked in Wheelock's laboratory at the Jefferson Medical College in Philadelphia. One of these review articles appeared in the *Journal of Cancer Research and Clinical Oncology* (95, 209, 1979). Wheelock wrote to a member of the editorial board of this journal, Ekkehard Grundmann, in March and again in May, explaining how the plagiarism took place. Wheelock recently received an answer from Grundmann, who said a retraction will be published in vol. 97, p. 213, of the journal. Armed with this notice of retraction, Wheelock is now writing to the other two journals and asking for similar retractions.

Retraction of the Alsabti papers from two indexing services seems unlikely, according to spokesmen at the National Library of Medicine (NLM) and the Institute for Scientific Information (ISI). NLM publishes *Index Medicus* and ISI the *Science Citation Index*. Spokesmen said there was no precedent for such a retraction, and that the organizations would probably hesitate to set one, as it might force them in the future to pass judgment on oftentimes contentious issues concerning authorship.

Meanwhile, researchers in England have accused Alsabti of pirating two additional papers, the accusations appearing in the 5 July *British Medical Journal*. The first Alsabti paper that is under fire appeared in the *Japanese Journal of Experimental Medicine* (49, 235, 1979). This paper, according to the *British Medical Journal*, is a

word-for-word copy of a paper that appeared 2 years earlier in the *Journal of Clinical Pathology* (30, 1048, 1977) and was authored by K. W. Pettingale and associates from King's College Hospital.

The second Alsabti paper appeared in the *Journal of Surgical Oncology* (11, 129, 1979). The same research appeared 2 years earlier in the *British Journal of Cancer* (36, 550, 1977), also authored by Pettingale and associates. In discussing this plagiarism, the *British Medical Journal* noted that "the figures and text have been changed and some of the conclusions differ, but they are clearly and essentially the same paper."

While Alsabti's trail through the scientific literature is becoming more and more clear, the whereabouts of the man himself are unknown. His \$70,000 house in Roanoke is up for sale, and administrators at the University of Virginia say he left no forwarding address. Based on their short acquaintance with Alsabti, some officials think he will stay in his chosen field. "He definitely knows medicine," says Hugh Davis, director of the Veterans' Administration hospital where Alsabti worked in affiliation with the University of Virginia program. "I'm sure he'll get another residency. There's just no way in the U.S. system to keep track of him."

NAS Panel Downgrades Radiation Risks

In an attempt to resolve a bitter dispute over how to assess health risks, a committee at the National Academy of Sciences (NAS) has hit upon a compromise that significantly downgrades the risk of cancer due to low-level radiation.

The updated report of the Committee on the Biological Effects of Ionizing Radiation (BEIR) comes a year after 6 members of the 22-person committee filed a dissenting opinion that called the majority report issued in May 1979 alarmist (*Science*, 18 May 1979). In the wake of the dissent, NAS president Philip Handler asked seven members of the committee, including two of the dissenters and excluding the chairman of the original report, epidemiologist Edward P. Rad-

ford of the University of Pittsburgh, to restate the section on estimating cancer risk. The updated report was released on 29 July.

The nub of the dispute has to do with the best way to estimate cancer risks at levels so low that no human epidemiological data are available. For this purpose, the 1980 BEIR report relies on a "linear-quadratic" model for extrapolating downward from the known effects of severe radiation and for calculating the low-level cancer risk. The seven-member panel in its rewrite of the earlier report concluded, for example, that a continuous lifetime exposure to 1 rad of radiation per year to 1 million people would produce 67 to 182 cancer deaths. In contrast to this, the 1979 BEIR report relied on a pure "linear" model and came up with comparable figures that ranged from 68 to 293 cancer fatalities. The BEIR committee had been asked to review and analyze current scientific knowledge on these issues by the Environmental Protection Agency, which along with other agencies uses the data for the development of radiation protection standards.

The 1979 figures, which had the approval of chairman Radford, met stiff resistance from the dissenters, who held that as exposure to radiation decreases, injuries taper off more rapidly than the linear model would predict. These issues have become heated in recent years because of growing public controversy over possible health hazards from radiation emitted by medical x-ray machines, home appliances, and nuclear plants. According to the linear model, for instance, even a miniscule release of radioactivity in a populated area has a negative effect on public health.

The 1980 report with its reduced estimates of risk was approved by the whole committee with the exception of Radford, a proponent of the pure "linear" model, and Harold H. Rossie, a radiologist at Columbia University who led the dissenters and who feels that the risk is still lower and that a pure "quadratic" model is needed to make statistical estimates. In lieu of their approval, the report contains statements from both Radford and Rossie. In his 28-page dissenting opinion, Radford, for example, criticizes the new report for stressing cancer deaths rather than harder-to-define cancer cases.

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