

obituary

Gersh Budker

PROFESSOR Gersh Itskovich Budker, Director of the Institute of Nuclear Physics of the Siberian Branch of the Soviet Academy of Sciences, died on 5 July 1977. With his death we have lost one of the most imaginative and colourful accelerator scientists.

Professor Budker was born on 1 May 1918 in the Ukraine. He graduated from Moscow University in 1941 and, after having served in the Soviet Army until 1945, began work at the Institute of Atomic Energy of the USSR Academy of Sciences. He was initially involved in nuclear reactor development but his interests gradually moved to accelerators for elementary particle research. In 1956 he also became professor at the Moscow Engineering Physics Institute.

In the same year the Scientific Research and Educational Centre, Akademgorodok, was created just outside Novosibirsk. This was a great challenge to creative young scientists, and it was natural that Budker, in 1957, was appointed director of its Institute of Nuclear Physics. This Institute has been the source of an almost continuous stream of ideas and novel accelerator systems and very soon became known throughout the world.

In his new position Budker was able to realise some of the plans he had already developed while at the Kurchatov Institute in Moscow. His main theme was to provide colliding-beam facilities so as to bring his institute to the forefront of elementary particle physics without the heavy expenses required for more conventional accelerators. He was not only afraid of great expense (he even sold accelerators in the 'open' market to boost his budgets), but also afraid of the inflexibility inherent in very large installations. The programme he established was ambitious and daring and made heavy demands on ingenuity and drive.

He had his first storage ring, VEP-1, working in 1963. An electron-positron device, VEPP-2 of 2×700 MeV, was in operation from 1967, another one, VEPP-3 of 2×2.2 GeV, in 1972, and a fourth one, VEPP-4 of 2×7 GeV, is at present under construction. They have made it possible for his institute to

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perform front-line experiments on meson resonances. Some of the rings have also been used as a source of synchrotron radiation for research in solid state physics, etc.

Budker had incorporated a two-way proton colliding beam device in the original plans for his Institute. He modified this in 1966 when he invented the so-called electron cooling of proton or antiproton beams, which made it feasible to propose instead a colliding beam project with antiprotons against protons. The electron cooling technique was essential for the accumulation of sufficiently intense beams of antiprotons.

But first the cooling principle had to be verified experimentally. With the limited means available at the institute this took longer than Budker had hoped and delayed the proton-antiproton plans. However, in 1974 his institute could report most beautiful experimental evidence for electron cooling of a proton beam. This invention and its experimental verification must be considered the peak of Budker's career. The technique and its possible uses are being discussed in accelerator laboratories all over the world, and it is being considered in important plans both at the European Organisation for Nuclear Research, CERN, and at the Fermi National Accelerator Laboratory in the United States.

Although Budker and his institute became best known because of the work on accelerator devices, the institute also has a branch that carries out research in plasma physics, which gives a very fruitful cross-fertilization between plasma physics and accelerator physics.

Professor Budker distinguished himself not only as a scientist, but also through his exceptional ability to stimulate and inspire his collaborators. His Institute is now 20 years old and has many remarkable achievements behind it. Nevertheless, it still retains an unusual pioneering spirit. Budker also felt very deeply about the whole philosophy that lay behind Akademgorodok and was a driving force in ensuring that this unique place became a centre of scientific achievements with a world-wide reputation.

Budker was a member of the USSR Academy of Sciences. In 1967 he received the Lenin Prize for his contributions to the development of colliding beam devices.

K. Johnsen

Milton N. Bramlette

MILTON NUNN BRAMLETTE, the distinguished American geologist, died on 31 March, 1977. He was born in Bonham, Texas, on 8 February, 1896, attended preparatory school in St. Louis, and entered the University of Wisconsin, Madison, in 1914.

His university studies were interrupted by World War 1. He enlisted in the aviation service, and qualified as a pilot, but too late in the war for combat service. He was discharged early in 1919 as a 2nd Lieutenant, and returned to Madison, where he graduated A.B. in 1921. During two summers he had served as assistant on the Wisconsin Geological Survey, running magnetic traverses across the iron ranges of northern Wisconsin.

With this field experience and high academic record, he was appointed Assistant Geologist in the U.S. Geological Survey in 1921. While headquartered in Washington he commuted to Johns Hopkins for advanced work in stratigraphy. After field mapping in Montana, Kansas and South Dakota, he took leave of the Survey