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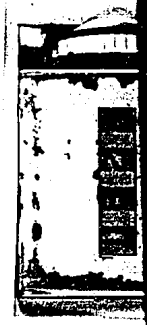

THE HUNGARIAN CENTRAL PHYSICAL RESEARCH INSTITUTE

Szabad Nep
Budapest, 5 Oct 54

Emil Szluka

In the Central Physical Research Institute, located in a quiet section of Szabadsaghegy [a residential hill in Budapest], a large number of young physicists are engaged in atomic research under the supervision of experienced professors. The institute has been in existence only a few years, but it has already produced important scientific and practical results.

In outside appearance, the institute resembles any other research institute. The various departments are housed in separate large buildings, and the surrounding area has been converted into a park. However, on entering any of the laboratories, a different picture presents itself. The doors of the laboratories of the atom physics department, for example, are painted white and can hardly be opened by hand because they are lines with lead. The instruments are of gigantic proportions. They are the electrostatic generators which are used for nuclear transformation. These installations are the latest acquisition of the institute; they were placed in operation only a few days ago.

The institute has various departments and laboratories which are engaged in cracking the hard shell of the atom. The organizational arrangement of the departments corresponds to the structure of the atom. The cosmic ray department is engaged in proton, electron, and cosmic ray research. The nuclear physics department conducts research in nuclear transformation. The spectroscopic laboratory investigates the atom as a whole and the electron shell which surrounds the nucleus.

The cosmic ray laboratory, under the direction of Prof Lajos Janossy, is equipped with an apparatus which intercepts cosmic ray particles. The laboratory, the walls of which are painted black, utilizes only the fastest particles for observation. It reproduces the cosmic showers which are produced when cosmic ray particles score hits on and explode some atoms in the earth's atmosphere. These explosions are produced in a chamber equipped with a glass window which permits visual observation of the hits. The path and dispersion of the particles are photographed with automatic cameras, and the pictures are then examined by researchers.

The work of the men who operate the spectroscope is also very interesting. The underground laboratory is equipped with spectrographic instruments, of which only a few exist in Europe. The ordinary spectroscope, for example, produces only 10-centimeter bands, while the spectroscope of the institute produces 3-meter bands. The spectrograph has a great future in industry -- for example, in determining the composition of molten steel in the casting ladle without laboratory analysis.

Another group of researchers is engaged in the analysis of spectroscopic absorption. This method was employed in analyzing the solution of "white mistletoe" (feher fagyongy), a medicine used for reducing high blood pressure. Spectroscopic absorption analysis made the production of the white mistletoe solution possible in Hungary.

In the cosmic ray department, artificial missiles (for example, the positive ions of hydrogen atoms) are used for bombarding the atom. These missiles will be produced in three generators, one of which is a cascade generator [see picture below]. A Van de Graaf generator and a so-called tank generator are currently under construction. The Hungarian physicists proudly state that they are constructing the largest generator in competition with a similar installation in the Paris laboratory of Frederic Joliot-Curie.

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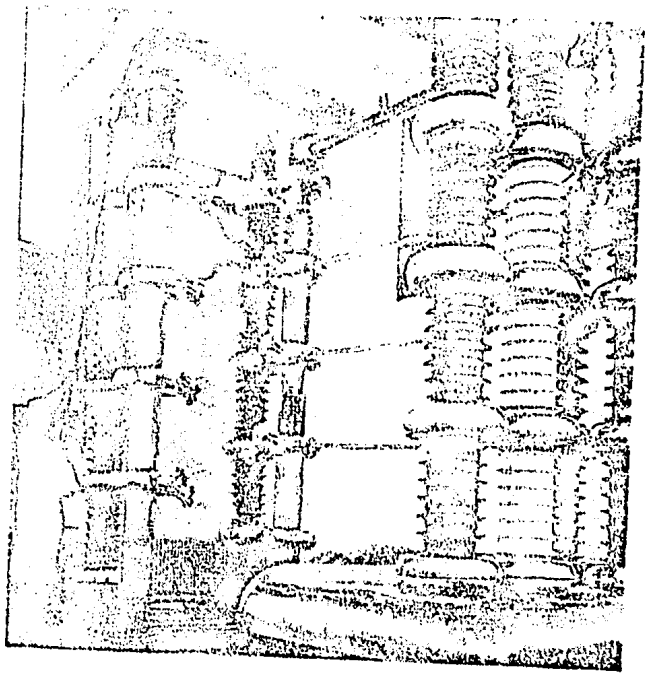
The walls of the laboratory which houses the generators are entirely smooth, and the metal parts of the generators have been smoothed and polished to avoid discharges resembling lightning. One of the porcelain legs is the cannon tube, through which the missiles pass at a speed of tens of thousands of kilometers per second. The missiles will be used for bombarding the atoms of gold, among other things. Under the effect of the bombardment the gold emits radioactive particles which leave a trace on the photographic plate. Other substances, too, can be made radioactive. Consequently, if a radioactive substance enters the human body its exact location can be determined by the camera.

The physicists and engineers of the institute designed their own instruments. These instruments, which had previously been procured abroad, are now being made in the workshop of the institute.



The High-Capacity Cascade Generator of the Central Physical Research Institutes

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