

Homage to Sir John

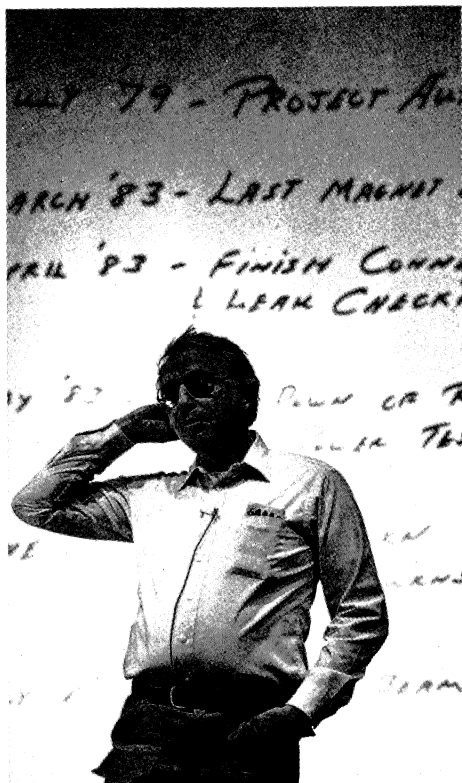
Sir Alec Merrison: early days with Adams at Harwell, under Cockcroft.

(Photo CERN 761.4.84)

gramme. The broad range of beams, targets, and detectors permits a detailed study of fundamental physics. He expressed his concern that the enthusiasm for colliding beams and limited funds may reduce the vitality of the fixed target programme and concluded by urging experimentalists to maintain a commitment to a healthy programme of fixed target experiments.

At the Saver/Doubler dedication, Fermilab's Accelerator Division Head Rich Orr reviewed the progress of the superconducting ring's commissioning.

(Photos Fermilab)



CERN's Main Auditorium was packed on 27 April when tributes were paid to the memory of Sir John Adams, former Director General of CERN, one of the main architects of CERN's big machines and a key figure in the development of the Laboratory, who died on 3 March.

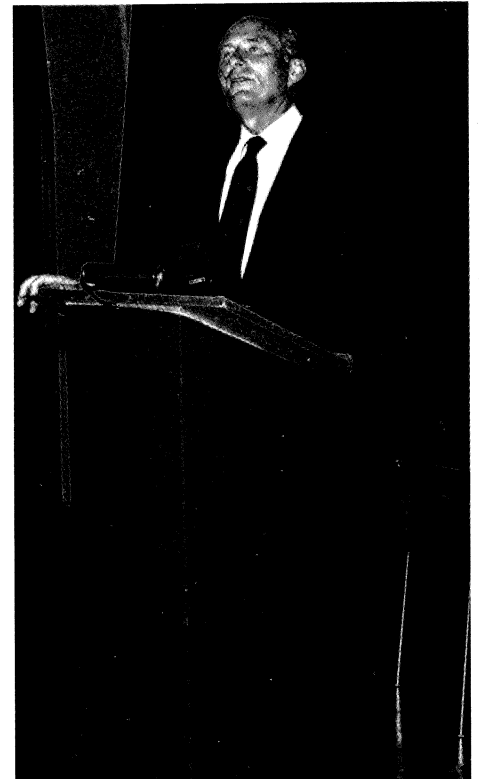
Introducing the proceedings, CERN Council President Sir Alec Merrison, a former colleague, recalled his early days with Adams at the Harwell Laboratory in the UK just after the Second World War, under the guidance of Cockcroft. Here Adams was introduced to the field of particle accelerators which was to become a major portion of his life's work.

Anselm Citron of Karlsruhe described John Adams' first contributions to CERN. Former CERN Directorate member Hans-Otto Wüster, now Director of the JET fusion experiment joint undertaking at Culham in the UK, took over to cover Adams' work after he left CERN in 1961 to establish the Culham Laboratory.

Then it was the turn of Paul Levaux, President of CERN Council from 1975-1977, to recollect Adams' return to CERN in 1969, his role in the construction of the big SPS machine and in the enlargement of CERN. Carlo Rubbia underlined the success of the SPS, emphasizing how its careful design facilitated subsequent operation as a storage ring for protons and antiprotons.

Before Sir Alec Merrison paid his final tributes, CERN Director General Herwig Schopper recalled Adams' concern for the environment and surroundings of the new CERN site on French territory, and proudly displayed photographs of the new features around the site's entrance. These now provide lasting memorials to one of CERN's great personalities.

Together, the speeches at the memorial gathering provided a fitting tri-



bute to one of CERN's founders and key figures. Here we concentrate on extracts from the presentations by Anselm Citron and Paul Levaux, which had most to do with Adams' work at CERN.

'It was in the building of the PS (Proton Synchrotron) machine that John Adams built up his reputation and the technical reputation of CERN from scratch under unusual circumstances,' said Citron.

'In October 1952 the CERN Council approved a switch to the exploration of the newly discovered alternating gradient principle with the aim of building a much higher energy machine for the same money. Also Geneva was selected as the site for CERN. The name of John Adams appears first on an invitation to a meeting of the PS group in Brussels in January 1953.

In October 1953 the group presented a set of parameters to an international accelerator conference in Geneva. The Council endorsed these parameters. New staff members, amongst them John Adams, were appointed and the group, consisting initially of 12 persons, including two visitors from Brookhaven, took up their work at the Institut de Physique of the University of Geneva.

In the following year, after the sudden death of Frank Goward, Adams became deputy. Later in the year, when PS Director Odd Dahl had to go back to Norway, Adams was appointed as his successor.

By 1959 the PS was operating on schedule, about one year ahead of

the Brookhaven Alternating Gradient Synchrotron. The cost was within 15 per cent of that budgeted originally. One year as a Director General terminated this decisive span in the life of John Adams and of CERN.

What is immediately apparent from the time schedule of the initial meetings is the enormous drive with which the founders of CERN, the senior scientists and politicians, pushed the realization of a European Laboratory. This speed would have been impossible without a corresponding enthusiasm of the builders of CERN who devoted themselves wholeheartedly to this noble challenge.

What is not apparent from the record is the way John Adams came into the picture and how he moved up from an interested spectator to the leader of the project in barely two years.

After working on radar projects during the war, John Adams had joined Harwell in 1945 and had built a synchro-cyclotron. There he was joined by Mervyn Hine who had a Cambridge nuclear physics background. The two listened to the discussion about the alternating gradient principle and soon started working on it in addition to their normal duties. Before long it became evident that the field index had to come down. But even then it was by no means clear whether a machine based on the principle would work. Today one would tend to simulate the whole accelerating process on a big computer. In 1952 computers were in their infancy but John Adams tried to run at least an oversimplified version of the process on a computer. But as an annual report note says: 'It is easy to show that a (complete) computer program would cost about twice the total budget of the PS machine'.

There were other difficulties. Peo-

ple coming from different countries that had been at war only seven years before had to work together. German group members still needed a visa for every European country.

John Adams came from a background of industry and Government projects and he had now to work with people from academia where only professors count! Finally, the contracts CERN could offer were of questionable legal value.

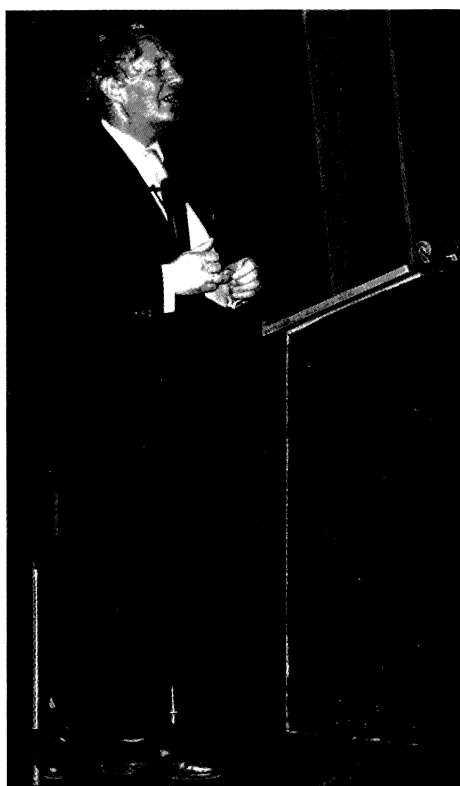
All these difficulties were just swept away by everybody's enthusiasm. John Adams used to say that he found people much the same everywhere.

What qualities singled out John Adams as a leader? I shall try and approach this question by commenting on another one. Was Adams an optimist or a pessimist? As usual, the answer depends to the meaning you are giving to the terms. If an optimist is a person who ignores the difficulties, hoping that with some luck he will get away with it, then Adams was certainly not an optimist. If a pessimist is a person who sees all the difficulties and gets paralyzed by them, then Adams was certainly not a pessimist. He would not only see the difficulties, but he would go out of his way to spot them. Then he would set his mind to work to find ways to solve the difficulties, minimize the risks, or build up a second line of defence. After this process, he would go ahead without hesitation and without having to rely on the advice of many people.

One of his first acts as a director of the PS group was to thank all the consultants and to concentrate the process of defining the parameters of the machine in a weekly parameter meeting. I still remember the careful and transparent way in which decisions were reached under his chairmanship and the atmosphere of calm assurance that emanated from him.

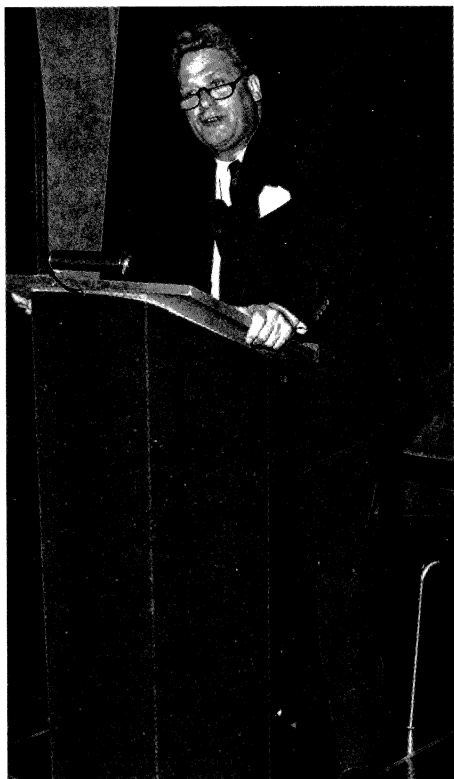
Anselm Citron: how John Adams moved from an interested spectator to project leader in barely two years.

(Photo CERN 737.4.84)



Paul Levaux: how Adams brought 'Project B' (subsequently known as the Super Proton Synchrotron) to fruition at CERN.

(Photo CERN 748.4.84)



This style of John Adams has become, to a large extent, the style of CERN. It has sometimes been criticized, but it has made possible the great achievements which came later.'

Paul Levaux covered the period after John Adams was invited by CERN Council, in December 1968, to return to CERN to lead the building of a '300 GeV' machine at a second European particle physics Laboratory, geographically separate from the existing one in Geneva. The CERN Convention had been amended to allow two Laboratories to run at the same time, and Member States had been invited to propose sites.

'From the very beginning, John Adams had been aware of the uselessness of the operation and the risk it posed to the future of European collaboration in the high energy field. Technically, the projects were com-

plete by 1969, but the spirit of competition which had gradually arisen between the various sites and the Member States concerned deadlocked the final decision.

From the time of his appointment, John Adams had anticipated such a setback and his pragmatic approach had brought him to imagine an alternative to the various projects. Abandoning the basic idea, the setting up of a second, geographically separate Laboratory, he propounded the concentration of all CERN's future activities in Geneva.

This change of direction made it possible to avoid the reef represented by the choice of sites, and was subsequently to afford a solid basis for European collaboration.

Although one problem had been overcome, there remained the other: the lack of enthusiasm on the part of some governments to support the project financially. John Adams then took up his pilgrim's staff and set out to defend his project before every competent national authority. He invited the United Kingdom Minister of Education to visit CERN and see for herself the worth and interest of its work. Fully persuaded, Mrs. Thatcher obtained the British cabinet's agreement to take part in this new scheme and soon all the Member States agreed on the principle of building this new tool for the elementary particle physicists.

At the end of 1970 John Adams put the new project before the Council, which accepted it. Nevertheless, its acceptance did not automatically mean that the programme was to start, although it had obtained the conditional support of seven Member States. The Council session was therefore adjourned until 19 February 1971, when ten countries decided to take part in the building of the SPS and John Adams was appointed Director General of CERN II.

The bringing into being of what was later to become the 400 GeV SPS was no easy task, and required all Adams' diplomatic talent and powers of persuasion. While he had succeeded in convincing political and administrative circles of the importance of creating this new scientific potential, he still had to persuade the scientific community that it was possible to build in Geneva a machine large enough to satisfy physicists' future needs. He decided to fix the diameter of the machine at its maximum, taking the risks with the molasse surrounding the Geneva site.

Thus, on 19 February 1971, CERN found itself running two Laboratories, CERN I, administered by Jentschke, and CERN II, administered by John Adams. Having amended its Convention to meet the need to operate two geographically separate Laboratories, CERN now had to face the long procedure required to unite two neighbouring establishments.

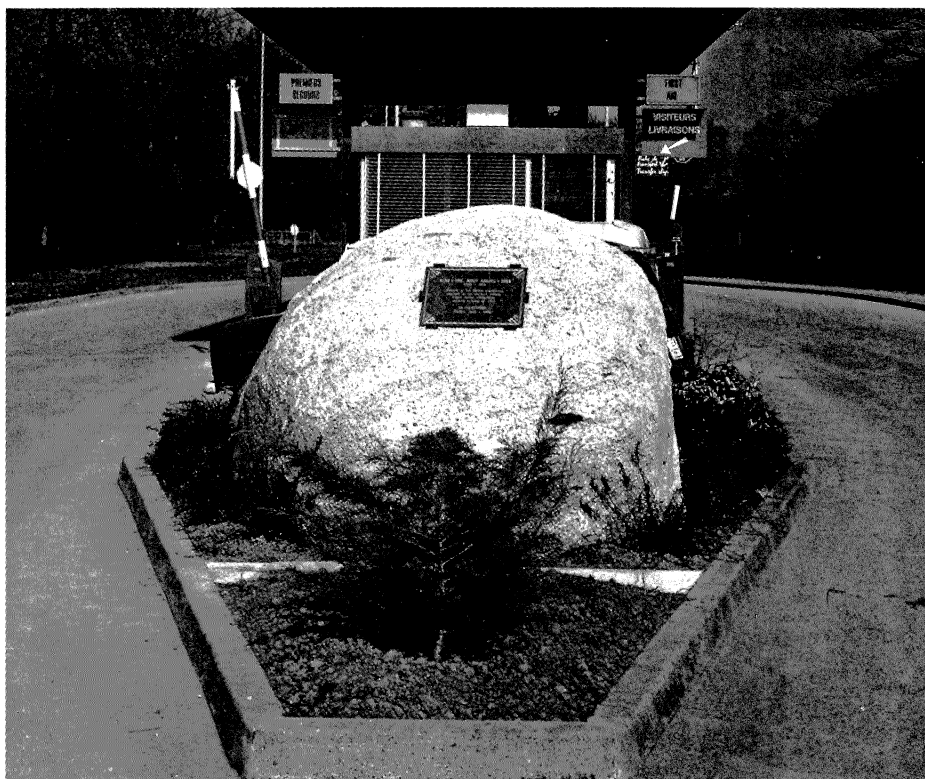
Laboratory II was soon to expand under John Adams' leadership. The tiny initial team was gradually to be joined by the most highly qualified specialists from the European Laboratories, including some of the old brigade from the first PS team who had just completed the Intersecting Storage Rings.

In 1975 CERN still bore traces of the ideas of the sixties — there were two Laboratories. However they were no longer geographically separated but joined together like Siamese twins on either side of the Franco-Swiss border. The final merger took place when the building of the SPS was completed, and the united Laboratories were placed under the joint tutelage of John Adams and Léon Van Hove.

It is with considerable emotion that the members of the Council re-

The memorial plaque at the entrance to CERN's Préessin site (below).

(Photos CERN 406/7.4.84)



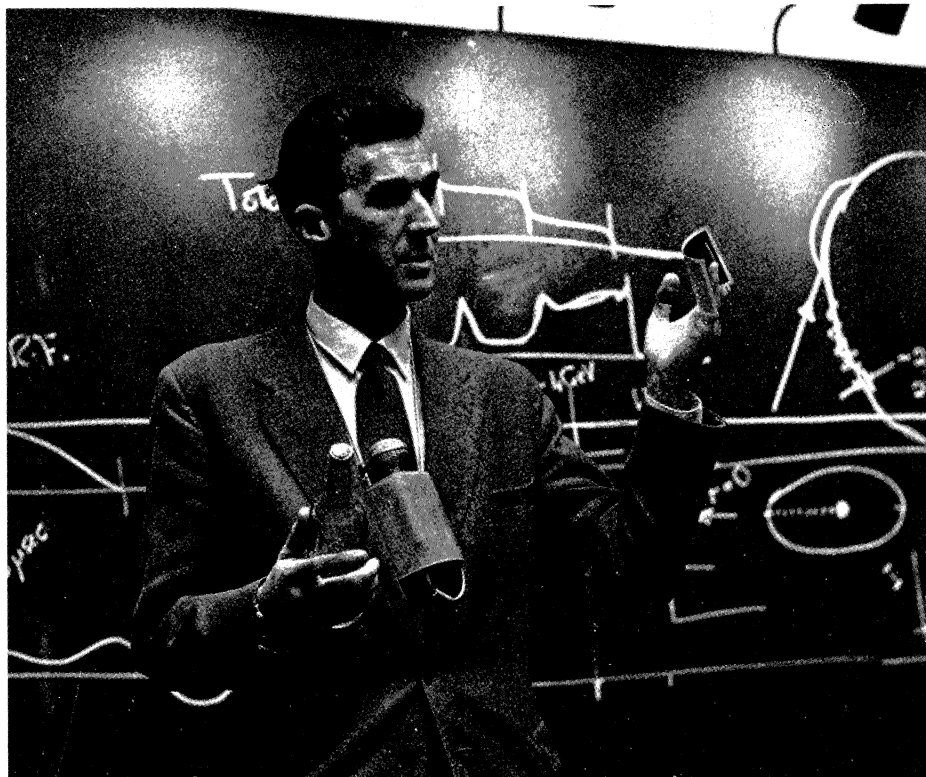
member the announcement made by John Adams at noon on 17 June 1976 that the SPS had reached its nominal energy of 300 GeV. The same day, at half past three in the afternoon, the SPS accelerated protons to 400 GeV. The physics world was unable to conceal its delight. Congratulations flowed in from all sides. This was the culmination of the efforts of John Adams and his team. The building of the SPS was a great success, and it is still one of the high points in the construction of equipment at the forefront of technology. It certainly rivals other technological achievements in sometimes more spectacular scientific fields.

CERN's management after the commissioning of the SPS in 1976 was to be mainly dominated by the proton-antiproton project and the design studies coming to fruition in the LEP project. In his report to Council in 1980, John Adams proudly reviewed the progress towards the proton-antiproton project, and stressed that the Council should approve the LEP project.

LEP is in fact the final result of a number of design studies made at CERN between 1970 and 1980. In the latest development of the project, it is proposed to use the PS and SPS as the injector for LEP, thus once again demonstrating the ingenuity of CERN's machine builders and the wisdom of the decision to keep all the machines in the same place.

Apart from the leading part which he took in the technical preparations for the project, one of John Adams' great achievements was the patient and highly detailed mapping out of the legal and administrative path for the Member States to take in approving it.

In 1980 Council gave John Adams its warmest thanks for the tremendous amount of work done and his



TOKYO

Successful stochastic cooling tests

Successful tests of stochastic cooling have been carried out in the small TARN ion storage ring at the Institute for Nuclear Study (INS), Tokyo. TARN (Test Accumulation Ring for Numatron) is a low energy (around 10 MeV/nucleon) ion storage ring built for technical development for the Numatron high energy ion accelerator project. The aim is to develop the techniques of stacking and cooling to achieve intense ion beams of good quality.

For these initial tests, proton beams injected from a sector focused cyclotron at 7 MeV were accumulated in horizontal and longitudinal phase spaces to obtain as high a current as possible in the 14 cm by 5 cm vacuum chamber. R.f. stacking was performed at 30 Hz and the intensity increased linearly up to 15 stackings, resulting in a momentum spread of 2.2 per cent.

Stochastic momentum cooling was then applied on the stacked protons with fairly simple systems, since the ring was not originally designed with such cooling in mind. The pickup and kicker are 75 cm travelling wave couplers with the inner conductors having helical pitch equal to the proton velocity. For the tests, the initial momentum spread of the beam was set at about 1 per cent.

The measurement of stochastic acceleration rate with the notch filter gave precise information on the time delay for the protons to travel from the pickup to the kicker, and the propagation time of the Schottky signals through the electronic system. Fine adjustment of the delay time (within 2 ns) was necessary for successful cooling.

essential part, in developing this science of the future. Back in November 1978 Adams had said: 'For me it's clear that most of what I've been able to do is just luck—being in the right place at the right time.' Let me complement this self-judgement. He was in the right place at the right time by selecting the correct options through analysis and through intelligence. He had the skill to lead them through to their conclusion and the steadfastness not to be distracted by convenience.

He has left his indelible imprint on European science and has made a major contribution towards setting up the high energy physics infrastructure for the remainder of this century.

The friend to whom we are paying tribute as a great builder and leader has left us much more. He has, often unbeknown to us, surrounded us with a friendship and warmth which

November 1959. CERN Proton Synchrotron Director John Adams holds in one hand an empty vodka bottle, in the other a photograph of one of the first 24 GeV pulses supplied by the newly completed machine. The vodka had been supplied by Dubna (USSR) for consumption if CERN succeeded in surpassing the Dubna synchro-phasotron's world energy record of 10 GeV. The empty bottle served to send the photo to the USSR as proof of CERN's achievement. Twenty-five years later, the PS is still the kingpin of CERN's high energy particle beam supply system.

(Photo CERN 14F.11.59)

has made no small contribution towards the good name of our Laboratory.'