

CERN'S FIRST DIRECTOR-GENERAL, 1954-1955

by L. Kowarski

ABSTRACT

Felix Bloch came to Geneva as the first Director-General of CERN in 1954. His role in shaping the early scientific structure and research atmosphere at CERN is described in this paper from a personal point of view.

Human achievements in all their variety are amenable to one universal criterion: that of novelty. The first achiever in any line of endeavor stands apart; after Edmund Hillary, no Everest-climber could claim to have done the same. Pioneering achievers show the way and merit our thanks; how much greater is the merit if the way not only has been trod for the first time, but is by itself the first of a new kind. Thus, when attempting to appraise the role of Felix Bloch in CERN's early years, we should keep in mind that there was no precedent to guide his first steps, that no organization directly similar to CERN was in sight for the purpose of a comparison. Bloch's value as an innovator was enhanced by the fact that the very existence of CERN¹ represented a major innovation in the history of scientific institutions.

The creators of CERN were called upon to innovate in three customarily distinct fields of human endeavor: scientific, engineering, and managerial. All three were essential. The scientists had to define the aim and the spirit of the whole enterprise; the engineers would handle its most conspicuous material aspects; the managers would set up and operate its institutions on an international scale. Ends and means had to be kept in balance: the holders of material and institutional powers might be tempted to indulge in self-justifying exercises in pure engineering or pure management. This possible danger was clearly perceived by CERN's scientific founders; ac-

¹L. Kowarski is deceased.

cordingly, they sought to strengthen the head of the scientific component by entrusting the top executive position in CERN's hierarchy to a creative scientist of a high level of achievement and recognition. A Nobel prize-winning physicist would be likely to fit this description; other cases and other criteria of outstanding value could of course be taken into consideration.

It was taken for granted, with a remarkable unanimity, that CERN *would* be headed by a chief executive officer. Remarkable, since this way of running an enterprise is by no means the only thinkable one. Supreme powers may be held in rotation, or collegially, or dually (this last variant is, in fact, the one now in force at CERN). Perhaps unity at the top appeared particularly desirable as a counterpart to disruptive effects of conflicting nationalisms. At any rate, speculations concerning various conspicuous "papabili" began to circulate as soon as CERN's governing Council started the discussion of the organization's future structure, early in 1953. My own memories of these rumors were appropriate to my standing in the hierarchy of the provisional CERN: close to the decision-making top but not of it, a high-level employee but not an employer. Three names percolated to us with some insistence: Casimir, Blackett, Auger; none of them fitted perfectly the already then current definitions of "the ideal man for the job," but then who ever does? The margin of acceptable variation is a matter of personal judgment; in this case Bohr's personality was preponderant enough to impose his idea of this margin. In making his choice he was supported by Heisenberg, whose enormous prestige on the highest level of European physics contributed a powerful influence in the same direction.

The Council appointed from its midst a "Nominating Committee," which started its work in the summer of 1953. By that time, Bohr's and Heisenberg's ideas were already quite clear, and the first contacts with Bloch had already taken place. Whether other contacts were attempted in parallel, and quickly discouraged, we do not know; perhaps the *a priori* definition of the set to be scanned was so narrow that the search for possible candidates was reduced to the question "are there any at all?" rather than "how many are there?" At any rate Bloch was a Nobel laureate, and a theoretician rather than an experimenter, a qualification we could expect to be significant in Bohr's and Heisenberg's eyes, and which legitimately could be claimed to guarantee a wider grasp of relevant general ideas. Bloch's enduring ties with his original background defined him as being "of" Europe, yet not "in" Europe, therefore not too closely identified with any particular geographic grouping. He was aware of the CERN initiative and had already followed sympathetically its development for several months before he became personally involved.

A long series of mutual questionings and "soul searching" (an expression Bloch used himself in a talk he had with me in 1974 on this subject)

started then (both Bohr and Heisenberg got engaged in it practically at the same time), and went on, by correspondence, for almost a year before Bloch and Bohr had the opportunity to sum it up in a personal get-together (Copenhagen, Spring 1954).

The long exchanges that had led to this conclusion were conducted so discreetly that many of Bohr's colleagues on the Council were hardly aware of this vigorous attempt to shape CERN's future leadership in accordance with an explicit philosophy of scientific values. Other philosophies were not at all unthinkable at this stage: for example, the idea was widely held that CERN's whole effort during the first few years should concentrate on the construction and commissioning of the first major piece of equipment (the synchrocyclotron). The man who, since May 1952, was in charge of this particular sector (Professor C. J. Bakker of Amsterdam) was the logical choice for the temporary leadership on the lines so defined. Accordingly, in October 1953 the governing Council expressed an almost unanimous intention to nominate Bakker as its candidate for the post of Director-General, which was expected to be officially created some time in 1954. A strong dissent was, however, voiced by one member country—the Federal Republic of Germany, then represented by Heisenberg. Since for this all-important appointment unanimity was considered essential, the formal decision was postponed and, in fact, withdrawn from the agenda. Bohr's and Bloch's "soul searching" could then continue unhampered.

When they finally met, Heisenberg was not present, but his views were incorporated in Bohr's presentation. They reached, in outline, an agreement—not yet a final one (since many essential details had, as yet, to be left open), but firm enough to induce Bloch to get a closer look at the already existing concrete elements of the situation. He came to Geneva in that same spring of 1954.

He found there a very busy international community of some hundred members of the provisional staff; many of them were settled in Geneva since the last months of 1953, and their numbers were growing daily. They were engineers, technicians, office workers, and also a few physicists who were temporarily diverted from their "pure" research by the lure of taking part in a new departure, in the creation of new facilities that, once ready, would enable them to resume their fundamental pursuits. CERN was also carrying on its payroll a small number of physicists who were learning the techniques of particle physics as visitors in various European institutes. The design and procurement for the synchrocyclotron were at that time still located in Amsterdam. We usually called it the "small machine," reserving the name "big machine" to the Proton Synchrotron (PS), which was expected to take more time and become available a few years later than the "small" one. The design of the PS required preliminary experimentation on a small scale, and this was located in Geneva, first under F. Goward and

later, after his untimely death in early 1954, under J. B. Adams. All surrounding "landscape" activities—administration, building, workshops, library services, were the task of the "Laboratory Group," which I headed with P. Preiswerk as my deputy. E. Amaldi, the Secretary-General of the provisional CERN, shared his time between his Rome office and his Geneva headquarters, where he ensured the detailed coordination between the groups listed above and also with the theoretical studies, then still located in Copenhagen.

Bloch's American experience still belonged to the traditional academic world; the Big Science spirit, already dominant at that time in neighboring Berkeley (the Radiation Laboratory), had not yet spread to Stanford. In Geneva, facing the busy beehive in the first stages of its self-affirmation, Bloch knew that the task before him required him first to preserve, and then to impose his own scale of values, making full use of the powers vested in his title and function. He would have to make decisions in a great variety of situations of which he would have first to grasp the unfamiliar elements. How much of his time, or peace of mind, would be left free so as to prevent the complete interruption of his own research activity? Since the spring of 1952 Amaldi had managed to direct the provisional CERN without having to relinquish his teaching and research duties in Rome, but during most of that period CERN was hardly more than an embryo. Would a fully grown CERN remain as accommodating? The first plunge gave Bloch a taste of the magnitude of the problem; a visit to Paris followed and there the issue was brought into the open.

Bloch's insistence on his continuing role in research physics was welcomed, and in fact asserted to be an essential component of a scientific personality deemed suitable for the post. He would be given a personal research budget and assistants of his choice would be put on CERN's payroll. The earmarking, for this purpose, of a substantial fraction of his time would require some statutory alleviation of the administrative load. A leading executive with fully deputized powers would have to be appointed, preferably a person of proven value both as a researcher and as a manager. It was considered probable that Amaldi would be available for such a position. The problem thus appeared to be neatly solved; the Nominating Committee was greatly relieved and, perhaps, in its eagerness, tended to minimize the gap between a mere probability and a firm prospect. Back in Geneva, when discussing these arrangements, I darkly muttered, "They are offering you a bribe." Many years later Bloch reminded me of this episode and seemed to agree when I pointed out that alluring bribes should, after all, be taken as compliments.

The expectation centered on Amaldi was, in fact, meant to be no less a compliment, but as the day of the binding decision was approaching, no conspicuous closing of the probability gap had taken place. At the end of

September 1954, the intergovernmental convention establishing CERN as a legal international entity came into force, and, a few days later, the Council in Geneva held its first session as the permanent CERN's governing body. Bloch arrived from America just in time to be officially confirmed as CERN's first Director-General. The appointment of his Deputy was expected to follow, but then it became known that Amaldi had not confirmed his availability. The Council proceeded to set up the divisional structure and to appoint the Division Heads. Three new divisions were created by expanding the preliminary nuclei that had originally been initiated within the "Laboratory Group"; of these three, the Division of Administration was given the widest powers and its Head, an experienced British civil servant (S. Dakin) became *de facto* Bloch's deputy.

Yet the desirable degree of blending between a scientific outlook and a decision-making managerial power could not be expected from Dakin and this responsibility had, therefore, to be assumed by Bloch himself. Thus came to nothing this ingenious compromise that, half a year before, appeared to be so necessary and so readily attainable. Within a few days of his arrival in Geneva Bloch had to face a clear situation: the position he had accepted did not, in fact, exist at all. It did not take him long to draw a conclusion that, to him, was obvious, no matter how surprising it appeared to those who did not expect him to stick to his sense of values so simply and wholeheartedly. He would give the new organization as much help as he could afford within the limits compatible with the continuation of his life as a working physicist. This meant that he had to remain on duty as long as (but no longer than) the time necessary for CERN to find and to appoint his successor and to ensure a reasonably smooth transmission of responsibility.

The prospective brevity of Bloch's tenure of office became widely known fairly soon; I remember discussing this subject with Dakin some six or seven weeks after his (and Bloch's) arrival in Geneva. On my own level of the hierarchy, as I remember it, the feelings were mixed. The prospect of continued uncertainty and instability at the top was viewed with misgivings; on the other hand, we understood and respected Bloch's motives. We appreciated his willingness to help, and we cooperated. Thus, during these months of transition and—for most of us—of settling down, the building up of CERN's equipment and institutions went on smoothly enough.

The same months of breathing space enabled the Council to seek a new solution of the top executive problem without undue haste. Arguments in favor of appointing Bakker, which had carried so much weight on a previous occasion (October 1953), could now be revived in a new context. Bloch's pioneering incumbency *did* assert the primacy of scientific values in the definition of the Director-General's function; a time-limited deviation from this definition, for the duration of a time-limited stage in CERN's life, could now more easily be accepted. With Bakker the machine-builder at the

head of CERN, whatever remained to be done about the synchrocyclotron could now be safely left to Bakker's original team. The direct responsibility for the completion and commissioning of this machine would be given to an experimental physicist, whose hold on this (at that time) dominating piece of equipment would automatically put him in the position of CERN's Chief Scientist. The new key appointments were announced in the spring of 1955; Bloch's tenure terminated in September, and the new regime (Bakker as Director-General, W. Gentner as the Head of "SC," the Synchrocyclotron Division) entered into force with no delay or disturbance.

A new kind of organization, a new kind of task, the prospect of a very brief tenure, the early arrival of the successor-designate—how much opportunity for achievement can one find under such inauspicious conditions, how much of a lasting imprint can one hope to leave? What measure of success was attainable by proclaiming and adopting a certain philosophy of values even if the banner-bearer of these values did not remain available for any length of time? It is here that Bloch's initiatives and actions undertaken during these brief months of 1954-1955 are worth a closer look.

First, a word about the location. CERN was soon to be identified with a single piece of land, at the suburban village of Meyrin, but in 1955 the process of concentration was yet far from being completed. Some provisional premises were put at our disposal by the Geneva authorities, on a piece of ground directly adjoining the growing Geneva airport—a quaint old villa, a few corners in the maintenance hangars, a place to set up a few prefabricated wooden huts. The villa became the executive headquarters, where both Bloch and Dakin had their offices. The hangars housed our first workshops and such preliminary SC work as could already be undertaken in Geneva under the, as yet, remote authority first of Bakker, and later on of Gentner. Library, documentation, some apparatus design, and various other supporting activities took place in the huts, while a few kilometers to the west, at Meyrin, the bulk of the excavation and foundation work (with the SC Building as its first priority) was already in progress since May 1954. Another temporary focus of CERN activity had sprung up at the urban center of Geneva itself: the Physics Institute of the University played host to CERN-connected international gatherings (technical and managerial), to CERN's lectures and seminars and—last but not least—to some more CERN-owned prefabs. There the division in charge of the "Big Machine" (Proton Synchrotron), under J. Adams, was deploying its design offices and small-scale supporting experiments.

CERN's jurisdiction, CERN-managed financing and, therefore, some of Bloch's responsibilities still were directly connected with a few locations elsewhere in Europe. As we have already seen, the build-up of the scientific staff was initiated well in advance. These researchers were then still in temporary residence at various suitably equipped research centers—the

future SC experimenters mostly in Liverpool and Uppsala, the future theoreticians mostly in Copenhagen. Cosmic-ray research, both experimental and theoretical, offered another set of possibilities for the initiation of CERN's future resident staff; by mid-1955, the attractive pull of Geneva was already bringing a team of cosmic-ray physicists, under A. Newth of Manchester, towards a nearby high-mountain location (at Jungfrauoch, well within a commuting radius from CERN's headquarters).

Bloch was fully aware of the relevance of these geographic aspects. Other leaders might feel the lure of a compromise that would enable them to combine a European faith with an unbroken allegiance to their own local fountainhead of scientific excellence. Could not a physicist based in Paris or Hamburg or elsewhere, just use the "Geneva machine station" as a source of data, as an oceanographer uses a dredging ship, or a geophysicist a balloon? Bloch allowed no such evasions. To promote the unity of European particle physics meant for him to foster this unity in its simplest spatial expression—one place in which the major equipment is located, the experiments are carried out, the abstract thinking goes on in daily contact with the experimenters. The machine-building and managerial anthill could safely be left to develop under its own momentum; *his* task was to see that a seed of scientific life was securely implanted in this newly prepared ground and that the young plant received proper care until it became self-sustaining.

The double life of Bloch as an executive and as a working physicist was reflected in the duality of his workaday arrangements. His directional offices at the airport provided the meeting ground for the frequent consultation sessions between the Division Leaders in which these (very autonomous) officers would tackle the current problems of common interest such as staffing, interdivisional exchanges of services and materials, etc. Contacts between the city-based PS Division and the rest of CERN were relatively few and hardly a source of major worries for the Director-General. The SC activities were closer at hand, and Bakker's gradual transition from the status of a Division Head to that of Director-designate brought him into increasingly closer contact with Bloch. In my own domain of "auxiliary science," the design and development of experimental equipment lay largely outside of Bloch's sphere of personal interest; only my library-and-publication section was for him an area of some attentive concern (see below). The building site at Meyrin was largely left in Preiswerk's care and Dakin was looking after its finances and contracts.

Conceived on these fairly reticent lines, it is hardly surprising that Bloch's executive personality left few outstanding traces in my memory. On one precise occasion—the selection and appointment of a Chief Purchasing Officer—Bloch chaired the Division Heads' meeting and expressed some of his opinions on the essence and psychology of administration, which I still remember with interest. My point here is that, having once accepted a task,

no matter how uncongenial, he gave it his full attention and reflected on it in depth. He showed the same goodwill in carrying out those rare ceremonial duties that were inherent in high office and had to be attended to even at CERN, in spite of its resolutely matter-of-fact style. In June 1955, for some obscure reason, it was deemed appropriate to hold some sort of a "Foundation Stone" celebration; Bloch submitted to this ritual with a visible (and memorable) effort, yet with an untroubled good grace.

There were compensations. During a substantial fraction of his life in Geneva, Bloch was free, in his other personality, to pursue theoretical researches on nuclear magnetism. In parallel with his own leave of absence from Stanford, two of his American assistants (Drs. J. T. Arnold and W. A. Anderson), temporarily on the CERN payroll, continued to work under his supervision. The product of these associated efforts was, in fact, first published jointly as a CERN Report.

The two faces of Bloch's person at CERN—that of an organizational leader and that of a creative physicist—found their combined expression in one overriding preoccupation, in which Bohr's and Heisenberg's original sponsorship continued to be reflected. CERN was destined to become a focal location of advanced scientific research; it was therefore important to implant there, at the earliest possible stage, the customary hallmarks of a research community. There should be interdisciplinary contacts between various specialized sections; one of Bloch's first initiatives was, accordingly, the setting up of a periodical colloquium in which either resident or invited scientists would lecture on topics of general scientific interest. A central library can play a similarly unifying role; since library and documentation had remained under my jurisdiction, Bloch and I met there on a common ground of interest. He took the initiative of appointing an interdivisional Library Committee and saw in it another expression of the desired unity under CERN's scientific banner. He gave the same measure of his personal attention to CERN's beginnings in the role of a scientific publisher.

The most far-reaching manifestation of the same line of thought occurred in connection with the implantation of theoretical physics. Bloch insisted on the creation of a Geneva-located group of theoretical studies in particle physics and thus initiated a process of transfer from Copenhagen to Geneva that took several years to complete (pending the final installation of CERN at its Meyrin site). A corresponding concentration took place during the same years on the experimental side, where the synchrocyclotron, nearing its completion, was exerting an increasing attraction. No corresponding pull was felt by the theoreticians; there a conscious effort *had* to be applied, and there Bloch did fulfill that strengthening function his sponsors originally had in mind.

Looking back at the state and trends at CERN at the time of Bloch's departure, one can see that the supremacy of scientific values, which he had

served so wholeheartedly during his brief tenure, was accepted unquestioningly and finally. It is difficult to imagine today that it could have been otherwise; yet the history of human institutions often shows that aims and intentions do not necessarily coincide with those that had animated the founders. When they do, this may be due to a strong guiding hand initially at work. Bloch's immediate successors—Bakker as Director-General, Gentner as the de facto Chief Scientist who presided over CERN's beginnings in experimental physics—continued in accordance with the same principles. The process of building up CERN's major facilities went on into the early 1960s. By that time a new structure became necessary. (It was essentially provided by Adams during his brief passage as Director-General.) In its new maturity CERN was then ready to experience another period of putting the supreme executive power in the hands of a renowned master of creative physics. Under V. F. Weisskopf's leadership CERN asserted its place in Europe and in the world and thus brought to fulfillment those same expectations that originally determined Bohr's and Heisenberg's choice of Felix Bloch as CERN's first Director-General.

REFERENCE

1. A brief description of CERN is given in the Editor's Note to the article by L. Kowarski, *Bull. At. Sci.* **33**, #7, 44 (1977).