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# STUDIES IN CERN HISTORY

## Germany's part in the setting-up of CERN

### Part II

Armin Hermann

GENEVA  
1986

The Study of CERN History is a project financed by Institutions in several CERN Member Countries.

This report presents preliminary findings, and is intended for incorporation into a more comprehensive study of CERN's history. It is distributed primarily to historians and scientists to provoke discussion, and no part of it should be cited or reproduced without written permission from the Team Leader. Comments are welcome and should be sent to:

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## Germany's part in the setting-up of CERN

Armin Hermann\*)  
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\*) Supported by a grant from Stiftung Volkswagenwerk, Federal Republic of Germany.

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## Germany's part in the setting-up of CER<sup>2</sup>

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Sections 1-3 were already presented in CHS-5.

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## GERMANY'S PART IN THE SETTING-UP OF CERN

### Part II: The years 1952-54

The present essay continues and completes the paper (CHS-5/AH) presented in November 1984 under the same title.

Both essays, in a slightly revised English version, will form a chapter of the "History of CERN", whose first volume is to be published by North Holland at the end of 1986.

#### 4. The ratification

When Heisenberg reported on the 2nd Council Session held in Copenhagen (20 - 22 June 1952), he expected the Convention to come into force in September 1953 and therefore recommended the provision of 1.8 million Deutschmarks for the fiscal year running from 1 April 1953 to 31 March 1954.<sup>1</sup> The Federal Foreign Office, as the Ministry responsible, was prepared to take the necessary steps for the Federal Republic's accession and to "include an amount for the participation in the European project in its 1953 draft budget".<sup>2</sup> However, the idea was dropped for tactical reasons, since it was thought in the Foreign Office that "a decision concerning the participation of Germany would be taken in May 1953 at the earliest", and "that the Bundestag should not have occasion to reject this item on the grounds that the Federal Republic did not yet have a binding commitment."<sup>3</sup>

In his letter of 20 December 1952 to Hallstein, Foreign Secretary of State, Heisenberg pressed for a "statement in principle by the Federal Government": a corresponding declaration "was expected from the German Delegation at the next Council Session (Brussels, 12 - 14 January 1953)". However, the Secretary of State wrote to Heisenberg on 12 January 1953 that he was not in a position "to make a final statement on behalf of the Federal Government at this stage":

Even a decision in principle for the Federal Republic to participate in European atomic research activities - however desirable it seems to me for many, well-known reasons - cannot be taken without the approval of the Federal Ministry of Finance, owing to the significant financial obligations involved [...]. I cannot submit the project to the Federal Ministry of Finance until I have received detailed documents relating to the financial commitments [...]. I hope however that this point will be clarified at the forthcoming Council Session [in Brussels...]. I hardly think I need to assure you again of the Federal Government's interest in this collaboration in accordance with the wishes of German scientific circles and also of German industry.<sup>4</sup>

Heisenberg thought that, on the whole, the Letter sounded "relatively positive".<sup>5</sup> The Session in Brussels did indeed bring the desired "clarity" concerning the member states' financial commitments. On 14 February 1953 Heisenberg submitted the "Report on the 4th Session of the European Council for Nuclear Research" (prepared by Alexander Hocker), saying "that the cost of the project is estimated to a total of 27.3 million dollars, i.e. 3.9 million dollars annually over a period of seven years with subsequent costs of 1.5 million dollars per year":

According to the proposals made at the last Session, Germany would have to contribute 17.78% of the above sums if the United Kingdom participates in the project. I would be grateful if a statement by the Federal Republic could be made as early as possible.<sup>6</sup>

Hocker, like Heisenberg, put pressure on the Foreign Office. As the Deputy Director of the Deutsche Forschungsgemeinschaft in Bad Godesberg<sup>7</sup> he visited the Foreign Office on several occasions. After a three-and-a-half hour discussion there on 10 March, he wrote, on the following day, a "Note" that was to be used as a basis for the discussions with the Minister of Finance and the Cabinet, although it "should actually have been written by the official responsible".<sup>8</sup>

Previously, at the meeting of the "Kommission für Atomphysik" held on 28 February 1953, Alexander Hocker had asked for express confirmation of

the interest of the German scientific community:

Mr. Hocker asked the Kommission to state whether German participation in the Geneva Project, which would require an annual contribution of 2.5 - 3 million Deutschmarks over a period of six to seven years, could be justified from a scientific point of view. Mr. Haxel, stressing the scientific interest of the project, said that in his opinion the political interest of German participation would be of even greater weight. Mr. Heisenberg likewise felt that the expenditure could be justified not only on the grounds of the project's scientific importance but also more particularly from the point of view of European co-operation.<sup>9</sup>

Before we continue with the sequence of events, let us say a word about the "Kommission für Atomphysik". It was set up on 29 February 1952 by the Senate of the Deutsche Forschungsgemeinschaft (DFG), with the aim - as the DFG's official report put it - "of advising the Government and the German Delegation in the negotiations concerning the Federal Republic's participation in the construction of a European Institute for Nuclear Physics."<sup>10</sup>

The activities of the Kommission, however, went far beyond this task; it was also concerned with the organization of nuclear physics and nuclear technology in the Federal Republic. Moreover, the "Kommission für Atomphysik" was, as long as it existed,<sup>11</sup> the forum where German physicists, in the confidential atmosphere of a small circle, would exchange and coordinate their opinions and determine the position to be taken in forthcoming negotiations.

It might be of interest to point out that in one case at least, i.e. at the above-mentioned 4th meeting of the "Kommission für Atomphysik" on 28 February 1953, in which the utilization of atomic energy in the Federal Republic and the German position in the CERN negotiations were discussed, the proceedings marked "confidential" fell into unauthorized hands. An internal British report of 17 April 1953 contained a summary of these proceedings, and the following comment: "The Germans do not know that



we are aware of these proceedings [...] and it would be most undesirable for them to discover our knowledge of the matter."<sup>12</sup> We do not know whether on the British side this knowledge of the German position actually had any influence or to what extent.

When Alexander Hocker drafted his four-page Note to the Foreign Office, he based himself on the vote taken by the "Kommission für Atomphysik". In this Note Hocker explained the scientific, economic and political importance of the project. The scientific arguments were put in the foreground. "Both for the theoretical and the experimental nuclear physicists", the Note said, "work at an accelerator that gives an insight into the phenomena of cosmic radiation has now become indispensable." What that "insight" meant for the understanding of nature, the Note didn't say, nor did it explain why large accelerators were "indispensable".<sup>13</sup>

The decisive argument was: "The construction of large accelerator facilities is so expensive that no European country, and in particular the Federal Republic, can afford to build such a laboratory on its own. Hence from a financial point of view the project virtually demands European co-operation."<sup>14</sup>

After touching on the project's importance for young scientists, Hocker then examined the economic interests. He only spoke about orders that might be placed with German industry without mentioning (as Heisenberg had done in his letter to Hallstein of 23 December 1951) the possibility of developing important technical applications from high-energy nuclear physics.

Finally Hocker considered the aspect of European co-operation from which, as he wrote, one should not stand aloof, "as the close contacts between European physicists benefitted this co-operation" which for the first time "showed tangible and promising signs of taking shape".

"Please don't be put off by the somewhat exaggerated wording", Hocker said to Heisenberg, the leader of the German Delegation, "it was chosen in order to produce the desired effect":

The reason why the scientific interest is mentioned first, before European co-operation (contrary to what had been agreed in the *Kommission für Atomphysik*) is that "European co-operation" is no longer so effective with the Federal Ministry of Finance, because for months it has been used as an argument for practically everything.<sup>15</sup>

The Foreign Office immediately adopted the arguments elaborated by Alexander Hocker. The "Note" of 11 March 1953 became the principal document in the ratification process.

On 17 March 1953 the Foreign Office's budget department drafted a proposal to the Federal Minister of Finance. When it was discussed the officials of the Ministry of Finance expressed reservations "concerning immediate inclusion in the budget [...] in view of the budgetary regulations (*Reichshaushaltsordnung*), in particular paragraph 45b (authorization of the expenditure by the legislative bodies); they suggested that the Cabinet be asked for a decision concerning the Federal Republic's accession."<sup>16</sup>

The Foreign Office immediately drafted a paper for submission to the Cabinet which contained the scientific, economic and political arguments presented by Alexander Hocker using the phrasing of his Note of 11 March. In the subsequent discussions between the Foreign Office, the Federal Ministry of Finance and the Federal Ministry of the Interior Germany's accession was clearly beyond dispute. However views differed significantly as to which ministry should be responsible, and hence whether additional funds should be provided for the European Laboratory or merely taken from the special research funds already granted by the Federal Government.

On 27 March 1953 the Federal Cabinet examined, at its 284th Session, under item 3 of the agenda, the accession of the Federal Republic and on the same day a telegram was sent by the Foreign Office to the German Embassy in Rome: "Following instructions by Secretary of State please inform Professor Heisenberg by member of the Embassy on Monday 30 March 10.00 a.m. at beginning of meeting of European Council for Nuclear Research [...] that Cabinet has approved the Federal Republic's signature to the Convention for the Establishment of the European Organization for Nuclear Research."<sup>17</sup>

At the Cabinet meeting, the Federal Minister of Justice was asked to examine whether the Convention "required the approval of the Legislative bodies under Article 59, para. 2 of the Basic Law (Grundgesetz)."<sup>18</sup> The Federal Minister of Justice could give no clear answer; nevertheless "in agreement with the Foreign Office" he considered it "necessary to deal with the Convention in accordance with Article 59, para. 2 and initially to sign it subject to ratification." Heisenberg was given corresponding powers signed by the Federal President and the Federal Chancellor and on 1 July 1953 he signed, in Paris, the "Convention for the Establishment of a European Organization for Nuclear Research", subject to ratification.

Ratification took some time. First of all new elections were held on 6 September 1953 for the second term of the Bundestag; on 20 October the new Federal Government was set up.<sup>19</sup> At the beginning of December the Foreign Office prepared a bill. The "Grounds" given in an annex took over almost the exact wording of Hocker's Note of 11 March 1953.

Progress was considerably hampered because of another dispute between the Foreign Office and the Ministry of the Interior concerning the question of competence. Again the Federal Minister of Finance supported the Federal Minister of the Interior. The latter had already been granted 10 million Deutschmarks of special funds for the promotion of research and, according to the Minister of Finance, if the Federal Ministry of the Interior was to become the ministry responsible, the contribution to CERN could be paid out of these funds, in other words without placing a further burden on the Federal budget.

On 7 December the Cultural Affairs Committee of the Bundesrat under the chairmanship of Northrhine-Westfalia's Minister of Culture Christine Teusch met in the Parliament Building to discuss the budget for 1954:

Heading 676 (contributions to cultural organizations other than UNESCO). The only point examined under this item concerned the Federal Republic's contribution to the European Organization for Nuclear Research which

gave rise to a detailed discussion. Minister Teusch reported that the Deutsche Forschungsgemeinschaft was worried about the plan of the Federal Minister of Finance to take the necessary 3'000'000 Deutschmarks from funds which had been attributed to the Federal Ministry of the Interior for German fundamental research. The Federal Ministry of the Interior and the Foreign Ministry declared that the question of competence was still not solved. I myself [Rudolf Salat] fully agreed with Minister Teusch who wished the contribution for this Organization to be allocated from the Foreign Ministry's budget. The Committee however disregarded this[...], not being in a position to propose financing.<sup>20</sup>

On 14 December 1953 a meeting took place in the Federal Chancellery at which the questions of competence and financing were to be clarified. The representatives of the Foreign Office were forced on the defensive, as the Ministry of Finance again supported the Ministry of the Interior and the representative of the Ministry of Finance also used as an argument the claim, "that he had been present during a conversation in which the Under-Secretary, Hallstein, had conceded to the Federal Minister of Finance that this amount should be covered by the Federal Ministry of the Interior."<sup>21</sup>

In the Foreign Office files there is still a "Note for the Secretary of State" from the budget department. In it, it is proposed "not to question the provision made for the contribution in the Minister of the Interior's budget planning".

Did that mean that the Minister of the Interior had won? A note in the files of the Foreign Office of 22 January 1954 indicates that, evidently at the very last minute, Heisenberg, in a private conversation with the Federal Chancellor, succeeded in getting a different settlement accepted. The opportunity for this conversation presented itself on 10 December 1953, when Heisenberg went to the Federal Chancellery in order to receive from Adenauer his Letter of appointment as the President of the Alexander von Humboldt Foundation:

The Federal Chancellor is said to have promised Professor Heisenberg at

the inaugural ceremony for the Humboldt Foundation that the contribution would be paid, that the responsibility would remain with the Foreign Office and that the amount in question would be granted as a supplement and not be taken out of the 10 million Deutschmarks which the Federal Ministry of the Interior had been allocated to promote priority programs in German scientific research and which the Forschungsgemeinschaft badly needs.<sup>22</sup>

Two of the three promises mentioned - namely that the amount would actually be paid and that it would not be taken from the funds already granted for research programs - were undoubtedly matters of personal concern for Heisenberg. However, it is not certain whether he also advocated that responsibility should remain with the Foreign Office and if he did, whether it was merely for pragmatic reasons. If the Ministry of the Interior became the department responsible, there was a risk that the special funds shown in its budget for the promotion of scientific research would be entirely or partly used for the payment of the German contribution to CERN.<sup>23</sup>

After the clarification by the Federal Chancellor, the cabinet paper already prepared by the Foreign Office ("Draft Law concerning the Convention of 1 July 1953 for the Establishment of a European Organization for Nuclear Research") could at last be submitted. On 24 February 1954 the Federal Cabinet approved the bill and, in accordance with the Basic Law, transmitted it first to the Bundesrat expressly stating that the Foreign Office was the Ministry responsible.<sup>24</sup>

On 19 March the "Draft Law concerning the Convention of 1 July 1953 [...]" was called as item 23 on the agenda of the 120th meeting of the Bundesrat and it passed without a report being read or further discussion.<sup>25</sup>

Now the way was open to submit the bill to the Bundestag where the subject was examined on 7 April 1954 in the budget debate when Foreign Office business was discussed. The experts attending as observers were surprised to hear talk about an "International Committee for Nuclear Research in Bern" instead of the "European Organization for Nuclear Research in Geneva" as would have been correct:

The contribution for the International Committee for Nuclear Research in Bern was the subject of a lively debate when the expenditure on scientific research within the Ministry of the Interior was discussed. The Minister of Finance had originally intended to deduct 3 million Deutschmarks from the 10 million DM earmarked for the priority programs in scientific research. The Budget Committee did not follow his proposal but granted a separate amount of 3 million DM for this International Committee leaving the 10 million DM for research programs untouched.<sup>26</sup>

The first reading of the "Draft Law concerning the Convention of 1 July 1953 for the Establishment of a European Organization for Nuclear Research" took place at the 26th Session of the 2nd German Bundestag on 29 April 1954.<sup>27</sup> The members had received document 394 consisting of the text of the Law and detailed justifications.<sup>28</sup> These justifications essentially used almost the exact wording of Hocker's arguments in his Note of 11 March 1953. The bill was transmitted without discussion to the Committee for Foreign Affairs.

On 14 June the Committee adopted the bill unanimously and without debate.<sup>29</sup> On 8 July the plenary Bundestag gave the bill its second and third readings.

The rapporteur, Fürst von Bismarck, stated that "Last Tuesday [on 6 July] the French National Assembly adopted the bill of ratification by a large majority so that, with the German ratification, the legal and financial conditions for the realization of the plans are now fulfilled. The has adopted the bill. May I ask the honourable members of the House to give their assent."<sup>30</sup>

The bill was unanimously adopted without discussion.

In accordance with the Basic Law, the Bundesrat examined the act once again on 23 July 1954. No objections were raised.<sup>31</sup>

In the meantime Edoardo Amaldi, Secretary-General of the provisional Organization, had become seriously worried. Under its Article XIII the Convention could only enter into force when, in addition to Switzerland as the host country of the planned Laboratory, six more countries had deposited their instruments of ratification with the Director-General of UNESCO and if the total of these seven countries' contributions amounted to not less than 75% of the overall budget contributions. This point was exactly the problem.<sup>32</sup>

In France the Law concerning the country's accession to the new Organization had come into force on 13 August, and in early September Amaldi received the assurance that the instrument of ratification would be deposited before the end of that month. However Italy, whose contribution amounted to 10.20%, had not yet ratified the Convention and was not expected to do so in the near future, so Germany's accession, with a contribution of 17.7% of the total budget, would be decisive for the Convention to come into force.

On 9 September 1954 Amaldi wrote an urgent Letter to Wolfgang Gentner: "I have no news at all about the progress of the procedure in your country and I am really worried about this question."<sup>33</sup>

Amaldi sent a copy to Hocker who replied:

As you know, Parliament approved the Convention before the summer holidays. Unfortunately the necessary formalities take some time; they were delayed because several ministers, the Federal Chancellor and also the Federal President whose signatures are required, were on leave in August. The official in charge in the Foreign Office assured me again today that the instruments would be deposited in Paris before the end of this month. I therefore think that you should not change the date of the Session scheduled for October. Now that I am back again, I can see to the matter myself. I told Preiswerk the same this morning when he called me from Zürich.<sup>34</sup>

The Federal President put his signature to the bill on

17 September 1954; it entered into force on 29 September 1954, i.e. one day after its publication in the Federal Gazette.<sup>35</sup>

For the new Organization, however, only the deposit of the instruments of ratification had legal validity. France and the Federal Republic deposited the instruments on the same day, i.e. on 29 September 1954, thus ensuring the required quota of 75% of the total budget, allowing CERN finally to come into being.

It is very likely that the two countries came to some arrangement. The delaying of the deposit by France where the Law had already come into force on 13 August and the unusual speeding up of the process by the Federal Republic which deposited the instruments of ratification on the earliest possible date, namely on the same day the Law came into force, speak for themselves. As a matter of fact, a telegram exists which Alexander Hocker sent to Robert VaLeur on 24 September in which the deposit of the instruments is mentioned.<sup>36</sup> But we do not know of any documents relating to the detailed arrangements (probably between the Quai d'Orsay and the Foreign Office).<sup>37</sup>

Let us summarize: Although for a time Heisenberg had been worried whether the Federal Government would really decide in favour of accession, following the clear statements of intent made by the scientific community, all political camps had been ready to give their support. The only question was whether additional funds had to be found or whether the expenditure should be met from the resources already allocated for research. Linked to this point was the question which ministry would be responsible. From the documents that still exist one gains the impression that the officials in the ministries were mainly concerned with this problem.

Considering the tenacity with which the officials protected the interests of the Foreign Office, it is surprising how easily responsibility was handed over on 15 October 1955 on the creation of the Ministry for Atomic Affairs. On 24 April 1956 Franz Josef Strauss wrote to the Foreign Office:



From the fiscal year 1956 onwards, in agreement with the Federal Ministry of Finance, the budget funds for the contribution to CERN shall be shown in budget plan 31 (Federal Ministry for Atomic Affairs)...

The answer simply stated that the Foreign Office accepted the new "arrangement" as "CERN is an organization whose aims are purely scientific".

Even today the German contributions to CERN are shown in the budget of the Federal Ministry for Research and Technology (BMFT) which succeeded the former Federal Ministry for Atomic Affairs. In 1984 the German contribution amounted to 215 million Deutschmarks i.e. 24.79% of the CERN budget.

#### 5. German positions

On the road that led from the first thoughts of European scientific co-operation to the ratification of the Convention on 29 September 1954, when CERN after many birth pangs was launched, there was a constant need for decisions. It was frequently the case (although not the rule) that in some countries special wishes were formulated and again and again the founding fathers showed their skill at finding reasonable compromises.

In the early fifties (as already explained) the Federal Republic of Germany was in a weak position politically, and the Germans generally knew when not to press their views. But even when they had no particular objectives of their own, they had to take a position on those of other countries. To give an example, we shall describe the German position on the siting of the Organization, the related problem of the Theoretical Group and the recruitment policy.

a) The seat of the planned Laboratory

On 31 May 1952 the Foreign Office asked the Forschungsgemeinschaft whether it considered that the Federal Republic should propose a site in Germany for the planned Laboratory. During the negotiations in Paris (17 - 21 December 1951) and in Geneva (12 -15 February 1952) Heisenberg had gained the impression that "the majority of the government representatives have already decided in favour of Geneva as the seat of the Laboratory". He therefore thought that a German candidature had no chance of being accepted, "and that it would therefore be preferable to drop it, particularly since we can be quite satisfied if the Laboratory is located in Geneva."<sup>1</sup>

The Deutsche Forschungsgemeinschaft associated itself with this view.<sup>2</sup>

In the middle of September 1952 the Ambassador of the Netherlands in Bonn contacted the Federal President and the Foreign Office asking them "to support the proposal of the Dutch Government to establish the International Laboratory for Nuclear Research in Arnhem."<sup>3</sup> On 24 September the Foreign Office telephoned Heisenberg to inform him and asked him, "to give favourable consideration to the Memorandum submitted by the Dutch Ambassador".<sup>4</sup> Heisenberg pointed out "that the Foreign Office had already sent him a similar proposal from the Swiss Government with the same recommendation".<sup>5</sup> He asked the Foreign Office to clarify its position which it did on 26 September:

In our opinion the choice of the location of the Laboratory should primarily be based on practical considerations. Thus the final decision as to which site Germany should vote for must be left to you. Should the preliminary talks reveal aspects of foreign policy, I would ask you to contact the Consulate-General of the Federal Republic in Amsterdam [...], through which if necessary coded telegraphic messages and enquiries could be transmitted to us.<sup>6</sup>

In his "Report on the 3rd Session of the European Council for Nuclear Research" in Amsterdam, Heisenberg said that Denmark, France, the Netherlands and Switzerland had proposed sites for the Laboratory.

The situation was difficult in as much as the question of the site had been linked with the problem of the future financing of the Theoretical Group in Copenhagen. The risk was that Sweden and Denmark might declare they were no longer interested in co-operation at all, unless the Atomic Centre in Copenhagen, traditionally the most important centre of its kind in Europe, were in some way or another included in the plans. I therefore strongly urged that the theoretical studies in Copenhagen should continue to be given support. After a long debate it was decided that, in addition to the construction of the two machines and the laboratory, the theoretical studies would also be continued with the Council's support. Finally France declared that she was prepared to withdraw her candidature for the site of the laboratory if the Council agreed on Geneva. Italy also showed a preference for Geneva. In view of the decision mentioned earlier concerning the continuation of the theoretical studies in Copenhagen, Denmark withdrew her candidature for the laboratory's site [...] I declared on behalf of the Federal Republic, that, in Germany's view, all the proposals were equally acceptable, although the Dutch proposal had for us geographical advantages. France and Denmark having withdrawn their proposals, both the Dutch and the Swiss proposals were very acceptable to the Federal Republic. However, in order to achieve a unanimous decision by the Council on this point, preference should be given to the Swiss proposal.<sup>7</sup>

#### b) The Theoretical Group

At the first session of the provisional Council held in Paris (5 - 8 May 1952) the leaders of the four groups were designated. "Unanimously and by acclamation" the Theoretical Group was entrusted to Niels Bohr; thus it became based in the Institute for Theoretical Physics in Copenhagen.

As quoted, Heisenberg had explained in his "Report on the 3rd Session of the European Council in Amsterdam", that the question concerning the location of the planned laboratory was linked with the financing of the Theoretical Group in Copenhagen. Heisenberg pleaded in favour of "continuing the support given to the theoretical studies in Copenhagen".<sup>8</sup> He probably

did so for two reasons: Firstly, he wanted to avoid the risk (already mentioned) that "Sweden and Denmark might declare they were no longer interested in co-operation at all, unless the Atomic Centre in Copenhagen, traditionally the most important centre of its kind in Europe, were in some way or another included in the plans."<sup>9</sup> Secondly, Heisenberg was himself a theoretical physicist, and what is more, for many years he had collaborated on friendly terms with Niels Bohr in Copenhagen.<sup>10</sup> So it must have been a matter very dear to his heart to help stimulate the theoretical studies under the direction of Niels Bohr in the context of the planned European co-operation.

At the 4th session of the European Council in Brussels the location of the Theoretical Group was discussed in depth. It was the wish of the Scandinavian countries that Copenhagen should remain the official seat of the Theoretical Group for five years, whereas the majority of the other delegations felt that it was important "to have a strong Theoretical Group in Geneva". Probably to deflect confrontation Heisenberg stressed that even more important than the location was "the enlisting of a senior theoretical physicist for the Theoretical Group as soon as possible, who would also be interested in the large machines and in their potential results. He should work full-time in the group."

It therefore seemed appropriate to me to adopt Sweden's proposal and designate Copenhagen as the seat for the Theoretical Group for a period of approximately five years. What should happen at the end of this period could be decided at a later stage. I also pointed out that the work of the Theoretical Group was very inexpensive compared to the expenditure on the other activities. It would take up only a very small percentage of the total budget.<sup>11</sup>

One and a half months later a meeting was held of the "Kommission für Atomphysik" at which Heisenberg reported to his colleagues on the status of the negotiations:

Mr. Heisenberg invited the Kommission to examine whether it would not be appropriate to propose to the European Council for Nuclear Research that 10% of the member states' contributions to the European Organi-

zation should be used for activities outside Geneva (balloon experiments, work on the machines in Liverpool, Uppsala, etc.). The possibility of co-operation in such fields was provided for in the draft Convention. Although it might be useful for the experimental teams to move to Geneva directly, this did not apply to the same extent for the other scientists taking part in "other forms of co-operation" [...]. After further discussion the Kommission decided to invite the Deutsche Forschungsgemeinschaft to propose to the Foreign Office that the Convention be amended so that 10% of the budget could be used for other forms of co-operation outside Geneva.<sup>12</sup>

This decision was indeed adopted, via the Governing Body of the Deutsche Forschungsgemeinschaft and the Foreign Office, as an official proposal of the Federal Republic to the Council. Heisenberg had expected that his proposal would be supported by the three Scandinavian countries, the United Kingdom and Italy. After clarification of the financial aspects, the motion was in fact approved unanimously by the Council.

The clarification established that "it is clearly not 10% of the total budget but an amount corresponding to 10% of the current expenditure".

The budget committee [...] estimated the current expenditure from the eighth year onward at 9 million Swiss francs, and thus the 10% financing for the other forms of co-operation amounted to 0.9 million Swiss francs per year i.e. at 6.3 million Swiss francs for the first seven years.<sup>13</sup>

This amount was included in the cost estimate.<sup>14</sup> 6.3 million Swiss francs were explicitly earmarked for "theoretical studies and other forms of co-operation".

As we have said the first director of the Theoretical Group was Niels Bohr; on 1 September 1954 Christian Møller officially took over this office. From the very first meeting of the Scientific Policy Committee, Felix Bloch, the Director-General, emphasized "that theory should be gradually moved to Geneva in the course of the coming few years."<sup>15</sup> The

Committee, chaired by Heisenberg, recommended that a theoretical group should be created in Geneva too, "which would be able to co-operate more closely with experimentalists than the theoretical group in Copenhagen."<sup>16</sup>

On 1 October 1957 at the end of the five-year period, the work of the Theoretical Group in Copenhagen was brought to an end. On the same day the Scandinavian countries set-up a joint research institute, NORDITA, which was located in Copenhagen.

### c) The German Collaborators

In his report on the first negotiations in Paris (17 - 21 December 1951) Heisenberg had urged that the Federal Republic should co-operate in the planning stage, using the argument that it would otherwise be difficult "to influence the project".<sup>17</sup>

Heisenberg himself certainly had great influence.<sup>18</sup> It was not immaterial for the success of CERN that at the first Council Session in Paris (5 - 9 May 1952) Heisenberg was appointed chairman of a committee whose mandate was to prepare a report "on the future work of the individual groups, and in particular on the size and the energies of the accelerators proposed."<sup>19</sup> To a degree this report was the intellectual basis of the whole enterprise.<sup>20</sup> In the report Heisenberg confirmed that "during the last few years the focus of interest had shifted from nuclear physics to particle physics", and explained the reasons why it was necessary to build accelerators for very high energies.<sup>21</sup>

When the Scientific Policy Committee (SPC) was set up at the first session of the Council after the Convention had come into force, the delegates elected Werner Heisenberg its chairman. He held this office until the end of 1957. The task of the SPC was to assess the research carried out inside and outside the Organization and to make proposals concerning the research activities.<sup>22</sup> The Committee was undoubtedly "a very important body".<sup>23</sup>

The second German delegate Alexander Hocker, was as such, a permanent member of the Finance Committee, a body which he chaired in the last year of his mandate.

But what was the situation regarding CERN staff members? In January 1954 Heisenberg noted with satisfaction that "in spite of the shortage of young scientists in nuclear physics, German participation in the Working Groups" were very active:

Professor Paul (Bonn) continues to co-operate very actively in the Synchrocyclotron Group. Dr Beyerle (Göttingen), head of the Institut für Instrumentenkunde of the Max-Planck-Gesellschaft has replaced the late Dr Grund (Erlangen) as technical adviser. Professor Gentner (Freiburg) plays an important part in the planning the Proton Synchrotron Group. Full-time staff members of the group include Dr Schmelzer (Heidelberg), Dr Lüders (Göttingen), Dr Citron (Freiburg) and Dr Geibel (Heidelberg). In the Theoretical Group Dr Haag (München) has taken over from Dr Lüders (Göttingen)... For the work on the synchrocyclotron in Liverpool Dr v. Gierke (Heidelberg) has been selected in addition to a Dutchman.<sup>24</sup>

There were some problems with Lew Kowarski, the leader of the Laboratory Group who in the beginning apparently did not want to take any Germans in his group. In a conversation with Wolfgang Gentner on 9 April 1954, Kowarski used the "poor excuse" (Gentner), "that he did not know whom to contact in Germany when there were vacancies in the Laboratory Group".<sup>25</sup> Thereupon Heisenberg wrote an official letter naming Gentner as the person to contact.<sup>26</sup>

When Frank Goward, who, as Odd Dahl's deputy, had to a large extent been in charge of the PS Group, suddenly died of a brain tumour on 10 March 1954 and Dahl declared that he was not able to invest more than 30% of his time in the work at Geneva, "the group's management had to be reorganized and a new group leader to be elected".<sup>27</sup>

Wolfgang Gentner was an official adviser to the PS Group and on 22 and 23 March he discussed the situation with Amaldi, Dahl and Adams:

We thought that a good temporary solution would be to have Adams run the group with the assistance of Dahl and myself[...]. During the discussions Adams suggested by way of a permanent solution that Schmelzer be proposed to the Council as group leader. Particularly from the English side it was underlined that Schmelzer [...] was highly esteemed and very popular. He is also the oldest among the senior physicists working here.<sup>28</sup>

However, in the 9th Session of the provisional Council in Geneva (8 - 9 April 1954) Robert Valeur objected to the appointment of Schmelzer as Director of the PS Group. In the view of Odd Dahl "this was not a personal objection but rather that the Group all the time had insisted on a man with project experience. If the experience of Schmelzer is considered adequate, then the French insisted that they could find just as good or better men in France."<sup>29</sup>

The de facto arrangement was therefore maintained for the time being with John Adams replacing Goward as Deputy Director. "Adams was worried", reported Christian Schmelzer, "that I might have been too much affected by the whole matter":

It is a strange feeling to realize that in this European Organization there are first and second class people. As a matter of fact Valeur's arguments against the man without machine, or more correctly without project experience are just a pretext: no-one with the required qualifications was available.<sup>30</sup>

The true reason for objection was probably that "the big machine" was considered the heart of the whole enterprise and did not want to give material for new attacks to critics in their own country who complained about the French having too little and the Germans (allegedly) too much influence.<sup>31</sup>

When the subject was discussed again several months later at Heisenberg's request, Dahl declared:



I am getting worried about political appointments in CERNC...] It will be very difficult to build the big machine, and the years are [...] rolling by. One should therefore try very hard to convince everybody that we should only use the best men for the jobs[...] Jobs with political colour, especially in the higher brackets, will quickly have unfavourable reflections in the groups.<sup>32</sup>

Gentner also thought at the beginning of August 1954 that it was too late to change the arrangement: "Adams has devoted himself with a lot of energy to this task [...] We have decided to propose from our side that at the next Council Session Adams be appointed Group Leader and Schmelzer his deputy."<sup>33</sup>

The next opportunity to fill one of the senior positions at CERN with a German national came with the creation of the post of "Chief Administrative and Finance Officer". On 12 May 1954 Amaldi invited the Council Members to submit proposals.<sup>34</sup> Heisenberg immediately mentioned Alexander Hocker and reported to the Deutsche Forschungsgemeinschaft:

So far no German has been appointed to one of the senior positions at the Institute in Geneva, and it is therefore very much in the German interest that at least the present vacancy for Director of Administration be filled with a German. However, that will only be possible if we can propose a really qualified man with many years of experience in the field of research administration.<sup>35</sup>

However, the post was given to S.A. Dakin (if only for a limited period initially). In a handwritten letter marked "personal" and "confidential" Heisenberg asked for information about what was behind the decision.<sup>36</sup> Amaldi replied that only personal qualifications had played a part in the choice<sup>37</sup>:

I can assure that there was no objection of any type about Mr. Hocker as person or as German. A priori all the Members of the Selection Committee were in favour to the idea of having a German in such a position.<sup>38</sup>

Several months later, when the same post was again vacant and the

German Delegation proposed Dr Friedrich Rau, Curator of the University of Frankfurt, it became obvious that at least the newly elected Director-General still had some reluctance about a German national. Wolfgang Gentner reported:

In my conversation with Bloch he told me that it was extremely difficult for him to support a German candidate, unless he could be entirely sure that the person in question had no compromising political past.<sup>39</sup>

At a meeting of the Kommission für Atomphysik on 15 December 1954 Heisenberg brought up the "political problem" and said that "as far as the appointment of senior staff was concerned, the Federal Republic had not been given an appropriate share in relation to its contributions":

As yet, none of the German candidates had been accepted for the post of Division Leaders. For certain applications sent to Geneva the decision were still pending. Mr. Rau (Frankfurt) had a good chance of getting the post of the Director of Administration. Mr. Kowarski had not yet invited Mr. Straub to join his group, but he had appointed a German Librarian. Several applications had been received for the post of site engineer. If Mr. Amaldi resigned as Deputy Director-General, as he had said, Mr. Bakker might be promoted to this position, always assuming that he would not then put himself forward for the post of Director-General. Although there was no mistaking the fact that in many countries feelings towards Germany were more hostile than, for example, four years ago - something he had recently noticed himself in the United States - he nevertheless wanted to write to Bloch and suggest that staff appointments to the eight top posts be discussed again. He thought that the Germans might be offered the responsibility for the construction of the small machine.<sup>40</sup>

And so it was. On 1 October 1955 Wolfgang Gentner became Leader of the SC Division. The hope of the Kommission für Atomphysik that Gentner would also be appointed Deputy Director-General however did not come to anything. The Committee of Council no longer considered this post necessary.<sup>41</sup> Again, political considerations played a part. Jean Willems, for instance, had declared that he was strictly opposed to the creation of the

post of Deputy Director-General but that if it were to be created, France would propose Lew Kowarski.

At first, Gentner, as a German, experienced some difficulty in his division, in particular with his Dutch collaborators, who turned directly to Bakker, the Director-General and their former group leader. However a good working climate was soon established.<sup>42</sup>

As a result of Heisenberg's remarks, repeated again and again since the middle of 1954, to the effect that Germans were not yet represented in the leading positions at CERN, parliamentary questions were asked in the Bundestag on 10 September 1955. The 35 signatories belonged to all parliamentary groups. Three out of the four questions concerned the construction of the first German experimental test reactor near Karlsruhe, the fourth question related to CERN: "How is the Federal Republic represented at the European Organization for Nuclear Research (CERN) in Geneva?"<sup>43</sup>

But one and a half years passed before the questions could be discussed in the Bundestag. On 22 February 1957 a member of the Bundestag, Mr. Geiger, presented the following arguments:

The fourth question [...] is already outdated, as Professor Wolfgang Gentner, Director of the Physics Institute of the University of Freiburg im Breisgau, has long since gone to Geneva to take charge of the small machine at the European Organization for Nuclear Research. I would like to point out that at the time when the question was asked [...] those who put it had justified doubts, that Germany might not be permanently and adequately represented at this important international laboratory. Professor Gentner has only signed a contract for two years and we therefore shall soon be faced with the problem of what to do once again.<sup>44</sup>

The Federal Minister for Atomic Affairs, Siegfried Balke, replied to the parliamentary question.<sup>45</sup> He obviously wanted to reassure the members and therefore started by explaining the representation of the Federal Republic in the Council before coming to the real problem:

The Federal Republic is represented on the CERN Council by Professor Heisenberg and by Dr. Hocker from the Federal Ministry for Atomic Affairs who is also a member of the Finance Committee. Professor Gentner from Freiburg is - as Mr. Geiger has said - Leader of the Synchrocyclotron Division. Professor Gentner's contract will come to an end in autumn 1957 and he is being asked to agree to an extension for another year. The Federal Government will do its utmost to assure permanent and adequate co-operation and representation of the Federal Republic at CERN. We have good chances of achieving this aim.<sup>46</sup>

The "permanent and adequate co-operation" referred to by the Minister became a reality. In 1964, at the suggestion of the Director General Victor Weisskopf, CERN drew up a list of physicists, "all first-rate scientists" who "have worked with great success in a leading position here in CERN", and who at the time were going "to start teaching at German universities". This list was the following:

Dr H. Faissner (Technische Hochschule, Aachen)  
Dr H. Filthuth (University of Heidelberg)  
Dr J. Heintze (University of Heidelberg)  
Dr U. Meyer-Berghout (DESY, Hamburg)  
Dr G. Weber (DESY, Hamburg)  
Dr K. Winter (DESY, Hamburg)

A second paper listed the scientific results of the bubble chamber experiments in which teams from the Federal Republic had participated. The conclusion was drawn by Weisskopf himself: "If one compares this impressive list with the research findings of other countries, one has to conclude that the German results must be placed second and are being surpassed in quantity only by the French results. When making a judgment [...] one has to keep in mind, that this is only the beginning."<sup>47</sup>

NOTES AND REFERENCES4. The Ratification

- 1) Report on the 2nd Session of the European Council for Nuclear Research (Copenhagen, 20-22 June 1952). The time required for the ratification procedure in the Member States was generally greatly underestimated.
- 2) Letter from Alexander Hocker to Werner Heisenberg, 11 August 1952.
- 3) Letter from Alexander Hocker to Werner Heisenberg, 4 September 1952.
- 4) Letter from the Secretary of State of the Foreign Office to Werner Heisenberg, 12 January 1953. The letter which had been written "before the Council Session in Brussels" and transmitted via the German Embassy in Brussels reached Heisenberg only after the Session.
- 5) Letter from Werner Heisenberg to Alexander Hocker, 26 January 1953.
- 6) Letter from Werner Heisenberg to Walter Hallstein, 14 February 1953.
- 7) Not far from Bonn. Bad Godesberg is now part of Bonn.
- 8) Letter from Alexander Hocker to Werner Heisenberg, 12 March 1953.
- 9) Minutes of the 4th meeting on 28 February 1953. The quote is taken from the final version. The draft prepared by Alexander Hocker (before its revision by Heisenberg) is even more explicit. It says: "Mr Haxel does not consider the physics interest as the main motivation for the German participation. That would rather be on the political side. Mr Heisenberg too feels that to 80% the cost should be considered from the angle of European collaboration."
- 10) Report of the Deutsche Forschungsgemeinschaft on its activities from 1

April 1952 to 31 March 1953.- The members were Fritz Bopp (Munich), Walter Bothe (Heidelberg), Wolfgang Gentner (Freiburg), Otto Haxel (Heidelberg), Werner Heisenberg (Göttingen), Hans Kopfermann (Göttingen), Josef Mattauch (Mainz), Erich Regener (Stuttgart), Wolfgang Riezler (Bonn). Werner Heisenberg acted as Chairman. Alexander Hocker attended the meetings as the representative of the Deutsche Forschungsgemeinschaft.

- 11) When the "Federal Ministry for Atomic Affairs" (the present Federal Ministry for Research and Technology) was set up on 15 October 1955, the Federal Government appointed the "Deutsche Atomkommission" (DAK) as its scientific advisory board, which was made up of leading scientists, civil servants and representatives from industry. The DAK established several sub-committees, one of which was for "Nuclear Physics". Its composition was identical with that of the "Kommission für Atomphysik". The same men under Heisenberg's chairmanship met as the "Nuclear Physics Working Group" set up by the Federal Ministry for Atomic Affairs and as the "Kommission für Atomphysik" of the Deutsche Forschungsgemeinschaft, until the latter was finally dissolved because the promotion of science in the field of nuclear and high-energy physics was completely taken over by the Ministry.
- 12) SERC, Swindon, Box NP 24.
- 13) Heisenberg had made similar statements the previous year, when at the request of the CERN Council he drew up a report on the "International Physics Conference" held in Copenhagen from 3 - 17 June 1952. See Werner Heisenberg: Report on the Scientific Conference held in Copenhagen... European Council for Nuclear Research. Second Session ... Minutes. Annex III. CERN/Gen/2.
- 14) Note of 11 March 1953 signed "Dr. Alexander Hocker, Deutsche Forschungsgemeinschaft."

The pace of the economic boom was unexpected. In fact five years later the Federal Republic was able to start the construction of her own big research laboratory for particle physics. After two and a half years of

preparation the Deutsche Elektronen-Synchrotron, known from its abbreviation as DESY, was officially founded.

- 15) Letter from Alexander Hocker to Werner Heisenberg, 12 March 1953.
- 16) Letter from Haushaltsreferat to Kulturabteilung, 18 March 1953.
- 17) Auswärtiges Amt, Kulturabteilung. PA 291.
- 18) Article 59, paragraph 2 of the Basic Law reads: "Agreements regulating the political relationships of the Federation or referring to matters of Federal Legislation require the approval or the participation of the appropriate legislative bodies in the form of a Federal Law."
- 19) CDU/CSU obtained 45.2% of the votes and 243 out of 487 seats. Adenauer formed a new coalition government and also acted as Foreign Minister (until 5 June 1955).
- 20) Note concerning "Sitzung des Kulturausschusses des Bundesrats". Auswärtiges Amt. Kulturabteilung. PA 293.
- 21) Note concerning "Frage der Zuständigkeit und Beitragszahlung der Bundesrepublik Deutschland zu der Europäischen Organisation für kernphysikalische Forschung gemäss Abkommen vom 1. Juli 1953".
- 22) Auswärtiges Amt. Kulturabteilung. Note concerning "Europäische Organisation für kernphysikalische Forschung". 22 January 1954.
- 23) In Heisenberg's view, the fact that Adenauer was also Foreign Minister was certainly a point in favour of the Foreign Office; Adenauer and Heisenberg were on especially good terms with each other. Against that, Heisenberg and Hocker also thought that the Foreign Office was not particularly effectual. See Hocker's Letter to Heisenberg, 12 March 1953 and Heisenberg's reply of 16 March.
- 24) Bundesrats-Drucksache Nr. 65/54 of 26 February 1954. Article 76, paragraph 2 of the Basic Law reads: Legislation initiated by the Federal

Government shall first be submitted to the Bundesrat. The Bundesrat is entitled to take a position on legislative bills within three weeks."

- 25) 120th meeting of the Bundesrat held on 19 March 1954. See: Verhandlungen des Bundesrates 1954. Stenographische Berichte. Bonn 1954, page 69.
- 26) 23rd meeting of the second Bundestag held on Wednesday, 7 April 1954 (Haushaltsdebatte, Haushalt für den Geschäftsbereich des Auswärtigen Amtes) page 816 (B) rapporteur Dr. Vogel (CDU/CSU).
- 27) Verhandlungen des Deutschen Bundestages. 2. Wahlperiode 1953. Stenographische Berichte. Vol. 19, page 1141 A.
- 28) Verhandlungen des Deutschen Bundestages. 2. Wahlperiode 1953. Anlagen zu den stenographischen Berichten. Vol. 28, Drucksache 394.
- 29) Letter from Alexander Hocker to Werner Heisenberg of 15 June 1954: "The Secretary of the Committee indicated, that the subject would probably have to be removed from the agenda. I succeeded in persuading Mr Grau, the Assistant Secretary, to write and call the attention of the Federal Chancellor to the urgency of the matter. The latter had to attend the Committee's meeting for discussions on the Saar. As a result, ratification was taken as item 1 on the agenda. In order to avoid any further delay, which is particularly likely if the Bundestag does not pass a bill before the summer recess, I suggest that you ask the President of the Bundestag to schedule the second and third reading of the bill in the near future ... I could then in due course take a similar initiative with the Director of the Bundestag."
- 30) Second Bundestag - 37th Session. Thursday 8 July 1954. See: Verhandlungen des Deutschen Bundestages. 2. Wahlperiode 1963. Stenographische Berichte, Vol. 20. Bonn 1954, page 1767 C. - Concerning the ratification in the French National Assembly see Dominique Pestre in CHS-15, page 52.
- 31) The legislative procedure is laid down in Article 77 of the Basic Law. It provides the possibility for the Bundesrat to ask that a bill which has been passed by the Bundestag is re-examined by the so-called "Vermittlungsausschuss" (mediation committee).



- 32) A List of the Member States in order of ratification is given in CHS-14, page 5, CHS-15, page 42 and in Lew Kowarski: "An account of the origin and beginnings of CERN." CERN 61-10, Annex IV, page 12.
- 33) Letter from Edoardo Amaldi to Wolfgang Gentner of 9 September 1954, CERN/2206.
- 34) Express Letter from Alexander Hocker to Edoardo Amaldi of 13 September 1954. Hocker had come back from holiday on that day.
- 35) Bundesgesetzblatt II, page 1013 and page 1132.
- 36) Ministère des Affaires Etrangères, Archives, box files "Affaires Atomiques, box 77.
- 37) According to the Foreign Office, a series of documents were "rashly destroyed" in 1965. Fortunately, in the political archives of the Foreign Office the CERN documents up to the year 1953 inclusive are still available, contrary to earlier fears. Documents for subsequent years, however, seem to have fallen victim to this action.

#### 5. German Positions

- 1) Letter from Werner Heisenberg to Rudolf Salat of 5 June 1952.
- 2) Letter from the Deutsche Forschungsgemeinschaft (Ludwig Raiser) to the Foreign Office (Rudolf Salat) of 10 June 1952.
- 3) File in the Foreign Office, 24 September 1952 (Dr Wolf).
- 4) *ibid.*
- 5) *ibid.*
- 6) Letter from the Foreign Office to Werner Heisenberg of 26 September 1952.

- 7) Report on the Third Session of the European Council for Nuclear Research (Amsterdam, 4, 6 and 7 October 1952).
- 8) *ibid.*
- 9) *ibid.*
- 10) A fellowship from the "International Education Board", allowed Heisenberg to stay at Niels Bohr's Institute in Copenhagen from September 1924 to March 1925; he worked there again as a Lecturer from May 1926 to September 1927, when he was appointed to the University of Leipzig.
- 11) Report on the Fourth Session of the European Council for Nuclear Research (Brussels, 12 - 14 January 1953).
- 12) Record of the 4th meeting of the Kommission für Atomphysik of the Deutsche Forschungsgemeinschaft on 28 February 1953 in Göttingen.
- 13) Report on the Fifth Session of the European Council for Nuclear Research (Rome, 30 March - 2 April 1953).
- 14) European Council for Nuclear Research. Second Report to Member States on the Organizational and Financial Implications of Future European Co-operation in Nuclear Research. CERN/Gen/5 page 11.
- 15) Scientific Policy Committee, First Meeting (3 December 1954). CERN/SPC/1.
- 16) CERN/128. At this stage the recommendation however only referred to the establishment of a small theoretical group consisting of two or three physicists.

- 17) Werner Heisenberg: Bericht über die Konferenz der UNESCO über die Durchführung von Arbeiten zur Errichtung eines europäischen Laboratoriums für Kernphysik on 17 December 1951. See also CHS-5.
- 18) See also CHS-5, where we have explained in detail the reason why the appointment of Heisenberg as the German delegate had been a fortunate decision.
- 19) Report on the Council Session for the Establishment of a European Centre for Nuclear Research (Paris, 5 - 9 May 1952), page 3.
- 20) Report on the Scientific Conference held in Copenhagen from 3 to 17 June 1952 (=European Council for Nuclear Research, Second Session: Copenhagen 20 - 21 June 1952, Minutes, Annex III, CERN/GEN/2).
- 21) Report on the Second Session of the European Council for Nuclear Research (Copenhagen, 20 - 22 June 1952) page 1.
- 22) Terms of Reference proposed by the United Kingdom for the Scientific Policy Committee, CERN/82.
- 23) CERN/106.
- 24) Report on the Eighth Session of the European Council for Nuclear Research (Geneva, 14 - 16 January 1954).
- 25) Letter from Wolfgang Gentner to Werner Heisenberg of 10 April 1954.
- 26) Letter from Werner Heisenberg to Lew Kowarski of 13 April 1954.
- 27) Letter from Wolfgang Gentner to Werner Heisenberg of 24 March 1954.
- 28) Ibid. This completely agrees with Amaldi's description of these talks: "It was finally agreed that the best solution would be to have Dr. Schmelzer. Everybody in the group has a great consideration for him,

- not only from a technical point of view, but also for his physical insight in various problems as well as for his human qualities." Letter from Edoardo Amaldi to John Cockcroft of 25 March 1954. CERN/1692.
- 29) Letter from Odd Dahl to Edoardo Amaldi of 24 July 1954. CERN archives. DG/2055.
- 30) Letter from Christoph Schmelzer to Wolfgang Gentner of 15 April 1954.
- 31) See Dominique Pestre: Les attitudes françaises face au projet de Laboratoire européen de recherches nucléaires (1949-1954). CHS-15, page 46. - Heisenberg, in his letter to Hocker, said that the French "were not keen for a German to be in charge of the biggest machine". (Letter of 19 July 1954).
- 32) Letter from Odd Dahl to Edoardo Amaldi of 24 July 1954.
- 33) Letter from Wolfgang Gentner to Werner Heisenberg of 2 August 1954.
- 34) CERN/1794.
- 35) Letter from Werner Heisenberg to the President of the Deutsche Forschungsgemeinschaft, Ludwig Raiser, of 19 May 1954.
- 36) Amaldi received the undated letter on 23 August 1954.
- 37) This assertion could be questioned. Alexander Hocker was considered a "highly intelligent, strong-willed and ambitious worker", whereas in Amaldi's letter he is described "as rather weak as personality". Correspondingly, Heisenberg did not believe, "that the personal impression given by Amaldi was in fact justified." Letter from Werner Heisenberg to Wolfgang Gentner of 27 August 1954.
- 38) Letter from Edoardo Amaldi to Werner Heisenberg of 25 August 1954.

- 39) Letter from Wolfgang Gentner to Werner Heisenberg of 19 November 1954.
- 40) Record of the Eighth Meeting of the Kommission für Atomphysik of the Deutsche Forschungsgemeinschaft on 15 December 1954 in Frankfurt. By the end of 1954 the following top posts had been filled at CERN:  
Director-General: Felix Bloch (US and CH)  
Director-General adjoint: Edoardo Amaldi (I)  
Director SC and member of Directorate: Cornelis Bakker (N)  
Director PS: John Adams (GB)  
Director Scientific and Technical Services: Lew Kowarski (F)  
Director Site and Buildings: Peter Preiswerk (CH)  
Director Theoretical Studies: Christian Møller (DK)  
Director of Administration: S.A. Dakin (GB)
- 41) Record of the Ninth Session of the Kommission für Atomphysik of the Deutsche Forschungsgemeinschaft on 4 May 1955 in Bad Godesberg.
- 42) Interview by Armin Hermann with Wolfgang Gentner on 1 September 1980 in Heidelberg, three days before Gentner's death. John Adams alluded in his obituary to the specific difficulties experienced by Gentner: "Taking over the SC machine from Bakker in the middle of its construction was no easy job. Bakker had built up a very competent team who were used to working with him since he had directed the work right from the beginning. Gentner found himself sandwiched, so to speak, between the senior members of the SC Division and their old boss who was then the Director-General. It was a situation that required considerable tact and human understanding." CERN/DOC 82-3.
- 43) Deutscher Bundestag, 2. Wahlperiode 1953, Drucksache 1657.
- 44) Verhandlungen des Deutschen Bundestages, 2. Wahlperiode 1953, Stenographische Berichte, Band 35, Bonn 1957, page 11050 D.
- 45) As explained, the responsibility had been transferred to the Federal Office for Atomic Affairs which had been newly created on 15 October

1955. At the request of Franz Josef Strauss, its first minister, Alexander Hocker left the Forschungsgemeinschaft for the Federal Ministry for Atomic Affairs.

46) As note 39), page 11051 D.

47) Memorandum über die Zusammenarbeit Deutschlands mit CERN. CERN archives. G 411.

# STUDIES IN CERN HISTORY

- CHS-1 Krige, J. The influence of developments in American nuclear science on the pioneers of CERN
- CHS-2 Pestre, D. Eléments sur la préhistoire du CERN
- CHS-3 Pestre, D. Prehistory of CERN: the first suggestions (1949 - June 1950)
- CHS-4 Krige, J. Launching the European Laboratory Project: Britain's importance to it, and the obstacles to her participation in 1950
- CHS-5 Hermann, A. Germany's part in the setting-up of CERN
- CHS-6 Krige, J. Britain's physicists respond to the European Laboratory Project: January - June 1951
- CHS-7 Pestre, D. Préhistoire du CERN : la fusion des initiatives juin 1950 - décembre 1950
- CHS-8 Belloni, L. The Italian scenario, Parts I and II
- CHS-9 Pestre, D. Préhistoire du CERN : le temps d'un optimisme raisonnable (décembre 1950 - août 1951)
- CHS-10 Pestre, D. Préhistoire du CERN : le temps des oppositions août - décembre 1951
- CHS-11 Krige, J. The change in policy of British physicists towards the European Laboratory Project, and their Government's reaction to it : July 1951 - February 1952
- CHS-12 Pestre, D. Préhistoire du CERN : La création d'un Conseil de Représentants des Etats Européens décembre 1951 - février 1952
- CHS-13 Mersits, U. Construction of the CERN Synchro-Cyclotron (1952-1957)
- CHS-14 Krige, J. From the provisional organization to the permanent CERN; May 1952 - September 1954  
I. A survey of developments
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- CHS-16 Krige, J. From the provisional organization to the permanent CERN; May 1952 - September 1954  
II. Case studies of some important decisions
- CHS-17 Mersits, U. High-energy physics from 1945 to 1952/53