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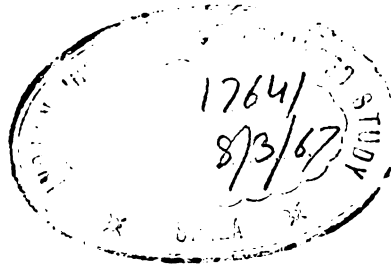
HERBERT FRANKE
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AND FINANCING OF SCIENTIFIC
RESEARCH IN GERMANY

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Herbert Franke

Planning, Organisation and Financing of Scientific Research in Germany

It is almost a truism that science and progress are closely linked in our modern industrial societies. This is particularly true for those countries where a lack of supplies and raw materials has to be made up by a concentration on light industry—not to mention the stimulation that science may and can give to agricultural production. I shall, however, not try to go into the problem how far and to what degree fundamental research is necessary or whether it is possible at all to concentrate on secondary and applied research alone. This is a question which is better to be left to the scientists themselves to decide. It seems, to a laymen in any case, that one cannot really have the one without the other and it would completely distort our picture if one would regard only those researches as necessary or desirable that can lead to technical and economic progress. The quest for truth and discovery, in the humanities as well as in the sciences, is today such an important part of our social lives that no modern society could live for long without this spirit of disengaged research. It is true that the relation between the sciences and society is far from clear and has been hotly debated in many countries. Whatever stand one takes in this discussion, it seems universally accepted nowadays that our life with all its tremendous technological and sociological implications can be mastered only by a large amount of scientific thinking, and many

fields of life are now being managed with the help of scientific methods that were formerly left to a more informal and even artistic, happily anarchic way of handling.

Our short survey of what is called *Wissenschaftsfoerderung* in German will therefore leave these deeper implications out of account and be concerned solely with the method by which Germany tries to keep up with other countries and their progress in the sciences and in humanistic scholarship. I shall try to outline which agencies we have in Germany for giving our researches the money that is needed, how it is distributed, where it comes from and to what degree we assign a priority to certain fields. I shall not and also cannot speak on a very important sector of research, that is research in private industry. It is well known that the major industrial firms have their own research departments and laboratories. Some of the most important discoveries of the last decades have been made in these privately financed research laboratories, e.g., some antibiotics. The amount of money that is put into research by private industry can only be guessed at but it is certainly considerable.

I am well aware that the mere mentioning of “planning” makes many people shudder. There is a strong tradition of individualism in German scholarship, and freedom from state interference has been one of the key words in the German intellectual and academic history of the last 150 years. Freedom of teaching and research is even a part of our present constitution. No one would dream in Germany of substituting for this freedom a state-controlled research. It cannot, however, be denied that where the available means are very limited—and that is the case in my country—certain priorities have to be agreed upon because not every institution and every individual scientist can be satisfactorily financed with the means at our disposal. In other words, I shall try to outline what we do to

spend the taxpayers' money in a responsible way for promoting science and scholarship. This German system, which tries to combine freedom of research with a minimum amount of planning and state supervision, is different from both the English and French system. In France, where the modern state originated after the revolution of 1789, the State has always supervised and directed the activities of scientists and research institutes. In Great Britain, on the other hand, state influence and interference has always been kept at a minimum—in a few other countries universities have a greater freedom than in the United Kingdom. Sometimes it is said today in Germany that the bad experience that we had under the Hitler regime has led towards an excess of freedom for science and scholarship and that a greater amount of the state supervision and guidance is necessary. It does not seem that the reasons for such a reversal of the tide are quite sound, because, as a whole, the German system of promoting research has proved quite satisfactory. Before I describe in detail the functioning of the most important agency, *Deutsche Forschungsgemeinschaft*, a few more general remarks must be made.

The German universities are, without exception, institutions where teaching and research are combined. To regard them primarily as teaching and educational institutions would be contrary to German tradition. This is also one of the reasons why the distinction between undergraduate and graduate studies that is made in Anglo-Saxon universities does not exist in Germany. As a rule, every German student should from the beginning be brought into contact with the problems and results of research. We still try to give all our students, without exception, a training as if they all wanted to become university professors. This is, evidently, an over-statement, and today there are many fields and whole faculties where this ideal had to be partly abandoned for a variety of

reasons. But for the academic teacher research is an absolute must. Every appointment of a German professor contains the words; "X. has to represent at the University of Y. the subject of Z. in *teaching and research*," (*Forschung und Lehre*). The research element distinguishes in Germany an institution on the university level from other teaching colleges. This can of course lead to a very curious sort of academic status-seeking. For some unknown reason mere teaching is regarded by many as inferior to teaching plus research. For example in the State of Bavaria we have had since 1959 *Paedagogische Hochschulen*, Teacher Educational Colleges loosely attached to the universities, where the future elementary school teachers receive their training. It has been hotly debated which of the subjects taught there should be raised to the research level, and finally some of the more general subjects such as philosophy, psychology, and theory of education were regarded as having the dignity of research subjects in the teachers colleges. This has some important consequences because if an institution and its academic staff are supposed to do research, the state (all these colleges, like our universities, are state institutions) will have to establish facilities for research such as libraries, funds, etc. To describe at present these colleges as scientific or research institutions would, however, be a gross misstatement. But the case shows the great prestige that in our country is attached to the idea of research.

It will be clear that universities including technical universities and some other institutions for higher education have an important, if not the most important, position in German research. But there are other institutions too. The Academies of Sciences are such institutions, and, of course, the Max-Planck-Institutes. Then there are quite a number of Federal Institutes where research is carried on. I mention here only the Federal Institute for Physics and Technology

In Braunschweig and Berlin or the Federal Archives in Koblenz. Also some of the States (*Laender*) have established research institutes for various purposes. Finally there are the industrial and technical research institutes or laboratories run by individual firms or by industrial or trade associations. There is a convenient handbook listing all these institutions together with names of scientific personnel, addresses and the special lines of research, the *Vademecum Deutscher Forschungsstaetten*, edited by the combined efforts of the *Stiffterverband fuer die deutsche Wissenschaft*, a private association organized by industry for the promotion of science, and the German National Science Foundation (*Deutsche Forschungsgemeinschaft*). Let me first say a few words on each of these different types of institutions.

Our universities have invariably attached to each professorship institutes or seminars which are the institutional basis for research. They evidently vary in size and importance. We have everything from small seminars for some fields in the humanities to big institutes with hundreds of workers, including the university clinics that too are regarded as institutions for research in medicine. All this is financed as a part of the universities who, in turn, are financed entirely by the individual states (*Laender*). There is no Federal university and no private university in Germany. The salaries of professors, lecturers, research assistants and teaching assistants, the money for keeping up and expanding the libraries of these institutions or sub-departments, the funds for conducting experiments etc.—all this comes to the universities as a part of the State budget, and the spending is supervised by the Ministry of Education of the State concerned. The ten *Laender* including West Berlin are more or less independent in their educational policies and there is a great difference in the financial means available. Nevertheless, considering the difference between the “poorer” *Laender* and the

“richer” ones, it is surprising that there is really some equality of status and performance among the universities. On the other hand, it was felt during the last ten years that the available State money is not always sufficient for keeping up with international standards, for example in the fields where huge investments are needed, as in nuclear physics and similar fields. Additional money had to be found in order to finance research. This is where the *Deutsche Forschungsgemeinschaft* (National Science Foundation) comes in, which shall be described later in greater detail.

The Max-Planck Institutes are a unique type of institution. They are administered by the Max-Planck-Gesellschaft, which is in turn the successor of the “Kaiser-Wilhelm-Gesellschaft zur Foerderung der Wissenschaften” founded in 1911. The idea behind it was to establish research institutes with no teaching obligations whatsoever and without State or other interference. The KWG was founded with the active participation of the then emperor, William II, but the main promoters of the idea were scholars such as Adolf v. Harnack, the famous theologian and historian, Emil Fischer (chemist) and the ministry official Aithoff. The principal capital funds were raised by subscription (10 Mill. Gold Marks) and the Prussian state gave land (in Dahlem, a suburb of Berlin) for building institutes. The state of Prussia also provided the salaries for the directors of the institutes. Under the presidency of Adolf v. Harnack (1911), Max Planck (1930), and Carl Bosch (1937) the KWG became an internationally famous organization. Many of Germany’s Nobel Prize winners such as Planck or Einstein have been attached to these institutes. After the Second World War the KWG was refounded and renamed the Max-Planck-Gesellschaft (26 February 1948); Planck himself could still take part in the first steps of reorganizing the society in the first chaotic post-war years. The first post-war president was Otto Hahn, Nobel Prize winner

and one of the discoverers of nuclear fission. The present president is the biochemist Adolf Butenandt, another Nobel Prize winner. The MPG consists of three sections: for chemistry and physics, for biology and medicine, and for the humanities. It is unnecessary to enumerate here the various institutes belonging to these sections. There are about 15 for chemistry and physics, 20 for biology and medicine, and now 5 for the humanities. These are: the MP Institutes for Foreign Public Law and International Law (Heidelberg), for Foreign and International Private Law (Hamburg), for History (Goettingen), and the Bibliotheca Hertziana in Rome (for the history of art). Recently a new institute has been added, for research on educational problems (Berlin, under Hellmut Becker, son of the late Minister of Education in Prussia). The emphasis is, however, clearly on the sciences, some of them applied sciences like the Institute for Aerodynamics in Goettingen, others focussing on pure research such as the Institute for Physics and Astrophysics under Werner Heisenberg (Muenchen). If I stated earlier that teaching is not among the activities of the MP Institute this has to be taken *cum grano salis*. Not a few of the scientists and scholars doing a full-time job in the institutes are also teaching at universities on a part-time basis, mostly as honorary professors. The funds available for the MP institutes come for the greater part from the public treasuries (Federal and State money, roughly 2/3), a smaller part from private donations and subscriptions. In 1954 the total expenditure was 22 Mill. DM; in 1957/58 it had been raised to 43 Mill. and was about 98 Mill. DM in 1963. There is no interference with the research work in the institutes from any side. No planning or guidance exist except for the work in the institutes themselves. This freedom to pursue pure research, unhampered by teaching duties, has led to very fine results, and the high level of performance of the MPI's alone should suffice to refute the arguments of those politicians who advocate stronger state control and supervision over our universities.

Another type of institutions for pure research and without teaching duties are our Academies of Science. There are at present 4 in West Germany (A. d. W. in Goettingen, founded 1751, Bavarian A. d. W. Muenchen, founded 1759, Heidelberg, founded 1909, and Mainz, founded in 1949). There must be added the "Arbeitsgemeinschaft fuer Forschung des Landes Nordrhein-Westfalen in Duesseldorf" (founded in 1950) which is in everything an academy of sciences except the name. The usual division is into humanities and sciences. Mainz has, which is a novel and unique feature, also a class for literature. All the German academies are self-governing institutions and membership decisions are made by the academicians by secret ballot without state or other interference. Normally the number of full members is restricted. My own academy in Muenchen has a constitution which provides for 36 full members under 70 years in each of the two classes. Each academy has a number of committees where long-term research is carried out and there are also some institutes attached such as in Muenchen our institute for research on low temperature physics. The academies are financed by a combination of state and federal money. Spending is supervised only in a very loose way, so that there is a great amount of independence. New committees (with corresponding appropriations of money) may be formed, if necessary, and existing ones cancelled if the purpose for establishing the committee has been fulfilled (e.g., publication of certain books or series). Most appointments, particularly for younger scientists and scholars, are therefore on a temporary basis only. Some people feel that the activities of academies should be expanded by creating more permanent institutes and providing full-time jobs, in order to set free more skilled talent to do pure research. The danger of a development along these lines is that talented people would be too much drawn away from the universities, which already now sometimes complain of a lack of qualified scholars and scientists. What was said above on

the inequality of funds available to universities applies also to the academies. Mention should be made, however, of the fact that there are many long-term projects in Germany carried out by cooperative effort on the part of two or more academies. There is also some degree of cooperation with the two academies in East Germany (Berlin and Leipzig). The review journal *Deutsche Literaturzeitung* is edited by a committee of scholars from East and West, so is *Orientalistische Lit. Zeitung*, another review journal.

For an enumeration of the many other research institutions and facilities where the initiative and often also the money come from private organizations and persons, I must refer the audience to the *Vademecum* mentioned earlier.

We have seen that in many cases the available money for research in the universities is not sufficient for modern needs. For example travel grants are never given by our universities. On the other hand it is obvious that some scholars such as anthropologists, linguists, orientalists and archaeologists have to travel if their work is to be any good. Or there might be a new and expensive type of apparatus needed for research which it is impossible to buy from the normal budget of a university institute or seminar. Who is to give the money and who decides whether and in what amount it should be given? This is the task of our National Science Foundation, the DFG. This organization is by far the most important in the field of research promotion, and at the same time the only agency which can exercise a certain amount of planning by emphasizing certain fields more than others. We must therefore describe this organization and its activities in greater detail, last not least also because a certain equilibrium between financing by the State and individual responsibilities on the part of the researchers has been reached there, a sort of compromise between supervision and guidance on

the one hand, and a maximum of individual research initiative on the other.

The DFG has a history going back to 1920 when the "Notgemeinschaft der deutschen Wissenschaft" was founded after World War I, in a period when Germany was living through a difficult period. In 1930 this organization was renamed the *Deutsche Forschungsgemeinschaft*. After the Second World War a new start was made, under conditions which were still more critical than they had been in the early 1920's. The chief aim of this organization is the promotion of research. The DFG is, under legal aspect, a private corporation. Members are all universities and institutions of university level, the Academies of Science, the Max-Planck-Gesellschaft, the German Association of Technical and Scientific Societies, the Society of German Scientists and Physicians, the Federal Institute for Physics and Technology and the Fraunhofer Society for the Promotion of Applied Research. The DFG has two major fields of activity; the promotion of research and to lay the scientific foundations for public measures serving the community as a whole. Promotion of research is accomplished through financial assistance given to research projects, through promoting cooperation among researchers and through giving help to beginners in the research field. The second duty, i.e., to supply the political bodies with the necessary scientific data for future action, is carried out chiefly by advisory boards, e.g., for legislation concerning dyed foodstuff.

It is a characteristic feature of DFG that all this is done by self-administration and by collective action and team-work. Public duties are therefore taken over by the scientists themselves, who serve in the various committees of the DFG without any remuneration. Among the activities of DFG that are not primarily of a financial nature, the promotion of cooperation among researchers is an important part. DFG does not want to be "dirigistic". It helps

to organize meetings of scholars and also provides information about current research projects in order to avoid duplication. An equally important activity is the assistance given to younger scientists and scholars. The problem in Germany under the present university system is to enable young and promising scholars to work for some time free of teaching duties and unencumbered by financial worries. This is done by scholarship grants given for one or more years. These grants are particularly important in fields where teaching duties would otherwise be very heavy (such as Germanic, English and Romanic philology which have an overwhelmingly great number of students), or in fields where no regular academic curriculum exists yet, that is, in new fields of science. This activity is therefore sometimes in the line of pioneer work, and there are not a few branches of science and scholarship in Germany which would not have been able to originate without the help of DFG. Mongolian studies, for example, are such a branch which could never have come into being unless DFG had given assistance to several pioneering scholars in that field.

The idea of cooperation is also stressed in those fields where industry and applied research come in. DFG has had, for many years, a Committee for Applied Research where scientists and representatives of business interests work together. International cooperation is an equally important field where the DFG has to play a role. In quite a number of international scientific projects German participation is channelled through the DFG. This organization is also a member of the German UNESCO-Committee, of the Humboldt Foundation and the German Academic Exchange Service. German participation in international congresses is also organized with the assistance of DFG. The money usually comes from the Foreign Office but is distributed on application through the channels of DFG. There are also quite a number of foreign scientists who

serve as members of committees organized by DFG. Last not least, book exchange with foreign libraries and institutions is one of the activities in this field of international cooperation.

I cannot go here into the financial side of the DFG budget because this would lead too far. Generally speaking, the bulk of the money (about 2/3) that DFG can spend comes from the Federal Treasury, smaller parts come from the various *Laender* treasuries, and another part from the "Stifterverband fuer die Deutsche Wissenschaft" (Association of Promoters of German Science, financed by private enterprise). Finally there are rather small and insignificant revenues from several sources, such as repayment of printing subsidies etc. The figures for the revenues of DFG since 1949 show an impressive upward trend :

1949	2,6 Mill. DM
1950	9,9 Mill. DM
1955	24,6 Mill. DM
1959	75,3 Mill. DM
1963	120,8 Mill. DM

The estimate for the 1965 budget year is 151 Mill. DM. This might not seem very much if one compares it with the sums that the American foundations can spend every year, but in terms of purchasing power of the Mark the sum must be regarded as considerable.

The organization of DFG is, at least at first sight, quite complicated. This is not so much due to a specific German tendency towards overorganization or a Teutonic love for red tape but rather the outcome of the particular nature of DFG as a self-administering organization working in the public interest and with much public money. The organization build-up reflects this curious intermediate position between individual scholars and researchers, government

and various independent research organizations. The DFG is headed by a president, who is elected for four years but may be re-elected. For many years this office was held by Prof. Gerhard Hess, Romanik philology (Heidelberg). His successor, since November 1, 1964, is Prof. Julius Speer (Forestry, Muenchen). Under the president there is a full-time staff of executives. Considering the wide range of activities and the responsibilities, this staff is surprisingly small. But it is, I venture to say, highly competent, and therefore the common bug in organizations of that kind, overstaffing, does not occur. The members of DFG (universities, academies etc., or rather their delegates) elect the senate. This senate has 30 elected members, scholars and scientists representing the main branches of knowledge, and three ex officio members, the President of the MPG, the President of the Permanent Conference of West German Vice-Chancellors, and the President of the Association of West German Academies. Senate members are elected for 3 years and may be re-elected. The senate is in many ways the policy-making body of DFG. Its duties are to consider the general interests of scientific research, to advise governments and legislations in scientific matters, to initiate and prepare research projects and to assure cooperation and coordination. All this is mostly done through subcommittees of the senate. Members of these subcommittees need not necessarily be senate members.

Fifteen senate members, together with twelve representatives of Federal and State Governments and two delegates of the Association of Promoters of German Science, form the Chief Committee (*Hauptausschuss*). The Committee is responsible for the financial aspects of research promotion. It grants, or rejects, the applications for assistance made to DFG, on the basis of the opinions given by the Advisory Committees (on these, later). The Chief Committee also proposes the annual budget. This is possible because the

representatives of the supporters (States and private industry) are members of the Committee. Appointments for the *Hauptausschuss* are usually made for one year only. Finally there is a Board of Regents (*Kuratorium*). The *Kuratorium* consists (a) of the Senate members, (b) of delegates of the Federal and *Laender* governments and of the Association of Promoters of German Science. The main comment upon duty of the *Kuratorium* is to decide upon the budget and to comment upon the annual report of the president's office.

These are the institutions of DFG according to the statutes. They are assisted by a number of advisory bodies. We already mentioned the Senate sub-committees and the Committee for applied Research. The Chief Committee appoints also the members of the Library Committee and the Publications Committee. The Library Committee consists of 8 librarians and 4 university teachers, the Publications Committee of 4 university teachers and 3 publishers. But by far the most important advisory bodies are the Advisory Committee (*Fachausschuesse*). It is obvious that the *Hauptausschuss*, with only 15 scholars and scientists on the board, cannot have an expert opinion on all of the numerous individual applications made to DFG. This is where these advisory committees come in. There are 26 *Fachausschuesse* which together cover the whole field of knowledge and research, from theology (Roman Catholic and Protestant), economics, law, the humanities, to science, technology and medicine. New *Ausschuesse* can be established, if necessary. Most of these advisory committees are again subdivided according to disciplines. To give an example: Biology has 4 Subdivisions, namely, General Biology, Botany, Zoology, and Anthropology. Physics has 7: Theoretical Physics, Experimental Physics, Biophysics, Applied Physics, Dynamics, Astrophysics and Astronomy, and Geophysics. My own field, Oriental Studies, is subdivided into 5 branches: (1) Egyptology, (2) Assyriology and Near Eastern

Archaeology, (3) Semitic, Islamic, Iranian and Turkish Studies, (4) Indology and ancient Iranian Studies, (5) Sinology, Japanology and related Studies (chiefly Central Asian).

The whole range of science and scholarship is in this way covered by the 26 Advisory Committees and their (together) 146 Subdivisions. The members of these Committees and the Subdivisions are elected by secret ballot (letter vote) from among German bona fide scholars by these scholars themselves, that is, university professors, *Dozenten*, etc., but it is important to note that the right to vote and to be eligible is by no means confined to the universities. For example, also directors and heads of departments of the MP Institutes or private scholars may vote and can be elected as members. For each Subdivision 2 scholars are elected by secret ballot (letter vote) every four years. They may be re-elected, but only once, so that the maximum term of office is 8 years. The Subdivision members within one of 26 Advisory Committees again elect by secret ballot a Chairman of Committee (*Vorsitzender des Fachausschusses*) and a substitute. The procedure for granting financial assistance for a research project, a travel grant, a printing subsidy or a scholarship is as follows:

The applicant sends his application to the Executive Office of DFG which hands it on to the two members of the appropriate Subdivision. Each of the two members then gives his opinion on the applications individually and separately. These two opinions are then sent to the Chairman of the Advisory Committee who again adds his personal opinion. These three opinions are then presented to the Chief Committee (*Hauptausschuss*) which meets generally 4 times a year. Usually the Chief Committee endorses the opinion given by the specialists, whether it be positive or negative. The decision taken by the Chief Committee is therefore based on the carefully

considered opinion of specialists who are elected by the scholars and scientists and therefore may be regarded as having the confidence of the whole profession. This is an important difference with regard to the way similar applications are handled, for example in some American foundations where the decisions for granting or withdrawing assistance are made by officials appointed by the foundation rather than by independent scholars elected by the whole profession. The decisions reached by DFG are therefore based on a procedure which may be called based on common consent. The quota for rejected applications has been in 1963 something like 16%. If, as very rarely happens, a scholar complains about rejection of his application, he cannot blame an institution or a procedure where he has no influence because it has been up to him to elect the two specialists for the Subdivision. The provision that nobody in these Committees can be re-elected more than once has also a democratizing effect. No established power position in a field or profession is possible—but there is another reason as well for limiting the terms of office. All this work is done without remuneration and it is much work. In certain fields where there are numerous applications the elected committee members may every few days find on their desk one of these familiar brown envelopes from Godesberg containing applications, and, in the case of printing subsidies, sometimes very bulky manuscripts. All this takes much time and labour and it would be unfair not to give a scholar who has won the confidence of his colleagues and who is elected, the chance to clear out after four years.

A few figures for what the DFG terms "Standard Procedure" (*Normalverfahren*) could be added here. In 1963—the last figures available to me—there were filed more than 3,000 applications. The total amount allotted (for material and personal research expenditures, scholarships, travel grants, sabbatical years and printing

subsidies) was 48,2 Mill. DM (in 1962: 41,6 Mill. DM). Of this sum, the humanities have received 23%, medicine 18%, the sciences 32%, technology 17%, agricultural sciences, veterinary medicine and forestry 10%. I should give here examples from the field which is most familiar to me, viz. Asiatic and Oriental studies, in order to show on what the DFG money is spent. We find in the section "Oriental Civilizations" the following subsidies for research projects (both for material expenditures, clerical staff and scientific personnel such as the employment of a research assistant): preparation of a critical Pali dictionary, excavations in Boghazkoy and Uruk Warka (in Anatolia and Iraq respectively), Chinese art theories, translation of the old Manchu documents (Laotang), dictionary of old Turkish, Boghazkoy texts in Luvic and Palaic, researches on kingship in ancient Egypt under the new empire, encyclopedia of Egyptology, edition of Rabbinic text and Mishna treatises, edition of unpublished materials on Egyptology, recording of Japanese music (chiefly folk and religious music), dictionary of classical Arabic, comparative dictionary of the Miao-Yao-Pateng languages.

The following scholarships have been granted: Egyptian Juridical documents from Deir-el-Medineh, Bronze Age in South West China, history of Aramaeans under the Babylonian Empire, translation of the Japanese Annals Shokunihonkoki, religion in China under the Sung, temple inscriptions of the Graeco-Roman Period in Thebes, the God Sarapis in ancient Egypt, edition of Coptic texts, Chinese mediaeval medicine, Lamaism and its relations with the State in Mongolia and China, a grammar of late Egyptian, study of pre-Islamic religions in some Java communities, Epistemology of Dharmakirti, and several others.

17 Travel grants have been given for the following purposes:
Chronology of Syriac manuscripts (England, France), The Buyid

dynasty and the Caliphate in 10th century Iraq (England), excavations of a Byzantine sanctuary (Turkey), excavation of a local Necropolis in Egypt (Egypt), History of Elam (Persia), Buddhism in Nepal (Nepal), Egyptian marriage contracts (England, Austria), Far Eastern Calligraphy (Japan), Edition of a Thai illustrated manuscript (Thailand), seals of Chinese artists of the Ming and Ch'ing dynasties (Japan).

The printing subsidies cover an equally broad field, I should mention that it is a current practice of DFG to subsidize also the publication of journals. The following Journals in the field of Oriental studies were subsidized: *Central Asiatic Journal*, *Der Islam*, *Oriens*, *Oriens Extremus*, *Die Welt des Islam*, *Zeitschrift der deutschen morgenlaendischen Gesellschaft*. All this gives, I hope, an idea of the broad range of studies and activities that are made possible through the DFG, projects that range from long-term researches carried out on a team-work basis to studies undertaken by individual scholars on their own responsibility. A full list of the research grants, etc., is published in the annual report of DFG.

The total sum for the Standard Procedure Research Applications was, as I said, 48,2 mill. DM. Another important item in the budget are the expenditures for the so-called *Schwerpunktprogramm* (Special Field Programmes). Something like 50 special fields have been selected by the senate of DFG where it is felt that a special effort must be made, for various reasons: This may concern fields of research where Germany is underdeveloped, or where a particular need exists for practical reasons, or where cooperation in international research projects is concerned. For all these cases the DFG reserves an estimated lump sum in its budget, and individual applications that come within one of these fields are dealt with by an abbreviated procedure. The total amount spent in 1963 on these

special fields was 38 Mill. DM. I cannot list here all the many special fields. A few examples are, in the humanities: Archaeology of the former Roman provinces on German soil, cataloging of Oriental MSS in Germany, reprints of important sources, prehistory archaeology of South and Central America, urban geography, redistribution of income. In the sciences we have, for example: cancer research, hematology, caries research, high frequency physics (LASER and MASER), earth magnetism, aerodynamics, air pollution, water pollution, oceanography. The German participation in international projects such as the International Geophysical Year or the International Quiet Sun Year also comes under the special fields programme.

Other items on the budget are, e.g., electronic computers (21 Mill. DM) and the assistance to younger scholars in certain underdeveloped fields (3 Mill. DM). It should be mentioned here that space research is only partly a concern of the DFG. An understanding has been reached with our Ministry for Scientific Research. The Ministry finances space research for high altitudes (about 80 km), everything below 80 km comes under the responsibility of DFG — an arbitrary division it may seem, but necessary. Finally the activities of DFG in the field of coordination and promotion of cooperation among scholars and scientists should be remembered here. DFG has thus far established three so-called units, long term cooperational projects of an interdisciplinary nature. The British model has been adopted in these cases. In Karlsruhe there is the unit Technical Cybernetics, in Freiburg the units Medical Virology and Preventive Medicine. Another specific project is the research vessel "Meteor", launched in 1964. It is a specially designed ship for oceanographic researches and has taken part in the International Indian Ocean Expeditions in 1964.

A word should be added on the Federal Ministry for Scientific Research. This Ministry is comparatively new (1962) and is headed by the Liberal Democrat Hans Lenz. As I said previously, atomic and nuclear research in Germany is financed through this Ministry (331 Mill. DM in 1963), but also space research (99 Mill. DM). Many other Federal Research Institutions are also financed or subsidized through the MSR. The total sum for these and other expenditures is 337 Mill. DM, most of which goes into applied research for defence, agriculture, forestry, European communities research programmes, etc. The German scientific activities in foreign countries such as the German Archaeological Institutes (in Madrid, Rome, Athens, Cairo, Istanbul, Bagdad, Teheran) are financed and supervised by the Federal Government. This applies also to semi-private activities such as the German Oriental Institute in Beirut of the German Oriental Society which is financed by the Federal Treasury. Another important item in the budget of the NSC are the subsidies given to the *Laender* governments for bringing universities and their libraries, laboratories, etc., up to date (25 Mill.) and for building new premises and universities institutes (185 Mill. DM). There is a close cooperation between the MSR and the DFG and other organizations concerned with research. The staff of the Ministry is quite small considering the total budget sum (775 mill. DM) but highly competent and with only the minimum amount of red tape, as everyone will agree who had to deal with its officials. I hope to be excused from giving any more details about German nuclear research, because this is a field with which I am unfamiliar since it does not come under the responsibilities of DFG with which I happen to have some experience.

Finally we must say a few words about the German foundations. Everyone knows the importance of foundations in the USA where fabulous sums are annually spent on research. Until quite recently

Germany, for a variety of reasons, did not have private foundations that could subsidize research to a considerable degree. Now we have two major foundations which can supplement the subsidies given by DFG, the MSR etc.: the *Stiftung Volkswagenwerk* and the *Thyssen-Stiftung*. Whereas the *Thyssen-Stiftung* goes back to the initiative of the Thyssen family which own a substantial part of Germany's heavy industry, the VW Foundation is in a way a public institution. It is well known that the legal status of the VW factories (the biggest car producers in Continental Europe) was very doubtful. The factories produced and produced, millions of VWs, but to whom the works actually belonged was not at all clear. The Volkswagenwerk had been established under the NS-regime but its former legal owner was defunct since 1945. For a number of years steps were considered to reshape the legal structure of the VW works, but a final decision was reached only in 1959/61. The VW works were given the status of a share company and shares were put up for sale. Shares at a nominal value of 360 mill. DM were sold on the stock market; the total proceeds were more than 1 bill. DM. This is the principal capital of the foundation—the money was given to the Federal Treasury as a long-term loan, with an interest rate of 5%. The interest payments are the main source of income for the foundation. In 1962, after the foundation had been established, an amount of 90 Mill. DM was available for the purpose for which the foundation had been founded, i.e. the "promotion of teaching and research in science and technology". In subsequent years similar amounts have been made available, the average being about 74 mill. DM. These are considerable sums, roughly equivalent to the annual expenditure of the MPG, or 50% of the sums that DFG has to spend in 1965. The proceeds from the sale of the VW works—for that is what it amounts to—can, however, not be spent freely. In the treaty between the State of Niedersachsen and the Federal Government, certain stipulations have been made. Each year

a certain sum, amounting to 20% of the total income, has to be set aside for the *Land* Niedersachsen. The rest is to be divided into so-called "regional funds" and "supra-regional fund". Regional funds (about 25% of the remaining total) are given to the various *Laender* (State) Governments for their projects, such as expanding and improving universities etc. Supra-regional funds (about 75% of the remaining total or about 43 Mill. DM p.a.) may be spent on individual research and teaching projects. The preference given to the *Land* Niedersachsen is explained by the fact that the centre of the VW production is Wolfsburg in Niedersachsen.

The organizational structure of the foundation is very simple. It is a private body, a corporation of private law. This has the great advantage that much red tape can be avoided and that many of the complicated rules for spending public money do not apply. The legal representative of the corporation is a board of curators of 14 members. Seven are appointed by Federal Government and seven by the State Government of Niedersachsen. The first Chairman of the board was the Prime Minister of Niedersachsen, Dr. Diederichs. The executive side of the foundation's activities is entrusted to the Secretary General, Dr. G. Gambke, a former DFG official. The board of curators decides on applications, on the budget and the annual report. There is no formal advisory board as we have it in the DFG. The *VW Stiftung* asks specialists for their opinions on the applications for subsidy that have been submitted. The executive staff is therefore exceedingly small, only a handful of men. Special attention was given to the problem of competition with other organizations for promoting research and a possible overlapping of applications. As a rule the VW Foundation does not subsidize projects that are already receiving money from institutions like DFG. There are a few points which show where a certain superiority of the VW Foundation over other similar organizations exists:

VW can take its decisions much sooner than, for example, DFG. VW can help in a much less bureaucratic way. And, finally, it can trigger off expensive projects which may later be taken over by other agencies. The activities and subsidies of *VW Stiftung* have been mostly concentrated on a smaller number of bigger, mostly long-term projects. The portion reserved for Niedersachsen has been exclusively used for the expansion and improvement of universities in Niedersachsen. Among the regional and super-regional expenditure items I can mention only a few. VW helps universities to build guest houses for visiting professors from abroad (I might add that no such programme exists for the permanent staff of German universities). Another programme is the improvement of libraries, including the future university library of Bremen where a new university will be founded soon. A special field, conditioned by the geographical situation of Niedersachsen on the German north coast, is flood research and water conservancy work. Some German research activities and institutions in foreign countries were subsidized, among them the Oriental Institute of DMG in Beirut, the Bibliotheca Hertziana in Rome, and educational research on some African countries. In the social sciences we find topics such as regional and urban planning, or cultural aspects of industrialization. In the humanities field VW finances the re-edition of the collected works of J. S. Bach, Joseph Haydn, W.A. Mozart, and Chr. W. Gluck. Science, medicine and technology are here, as in other organizations, getting the lion's share. A great amount of money is spent on scientific apparatus, machinery and computers. In the future the role played by the VW Foundation will certainly become even more important than it is already, and it seems that the unbureaucratic procedure of the Hannover executive office will initiate a number of important new research projects and institutions.

The activities of the *Thyssen-Stiftung* are more or less the same as those of the VW Foundation, only on a slightly smaller scale. Both foundations devote a certain part of their spendings on assistance given to young scholars (grants for writing a Ph. D. or similar thesis) so that many top-grade students can work for their degree free of financial worries.

These short remarks should suffice to give an idea what is done in Germany today to promote research. It should be added that there is, contrary to many expectations, no animosity between the various agencies for research promotion, but a considerable amount of cooperation and mutual agreement. If there is any planning in German research today it is less due to state supervision and interference or even "dirigism" than to tacit or international agreement between these organizations or individuals. A certain amount of guidance is provided through the memoranda of the DFG where suggestions for the future development of a certain specified field are given. An important step in this field was the publication of DFG's memorandum on the present state of German research in science and technology. Here we find a very carefully worded description of the state of affairs, always taking into account the situation in other comparable countries. It is almost certain that steps will be taken to improve the situation in those fields where Germany has not reached the international level or has lost its former prominence. This unobtrusive guidance through pointing out deficiencies seems to be, at least under present-day conditions, the best way to secure the most useful and fruitful promotion of research without actually planning it in every detail.

