Mathematisches Forschungsinstitut Oberwolfach

Information on the Work, Organization,
and History of the Mathematical Research Institute Oberwolfach
On the Occasion of its Anniversary 1984

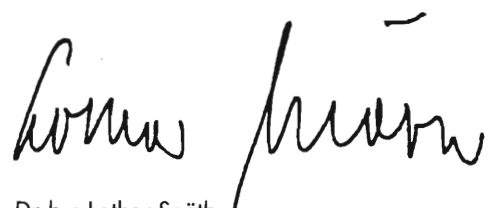
Published by Gesellschaft für mathematische Forschung e. V.,
Freiburg/Br. in cooperation with Stiftung Volkswagenwerk, Hannover

PREFACE

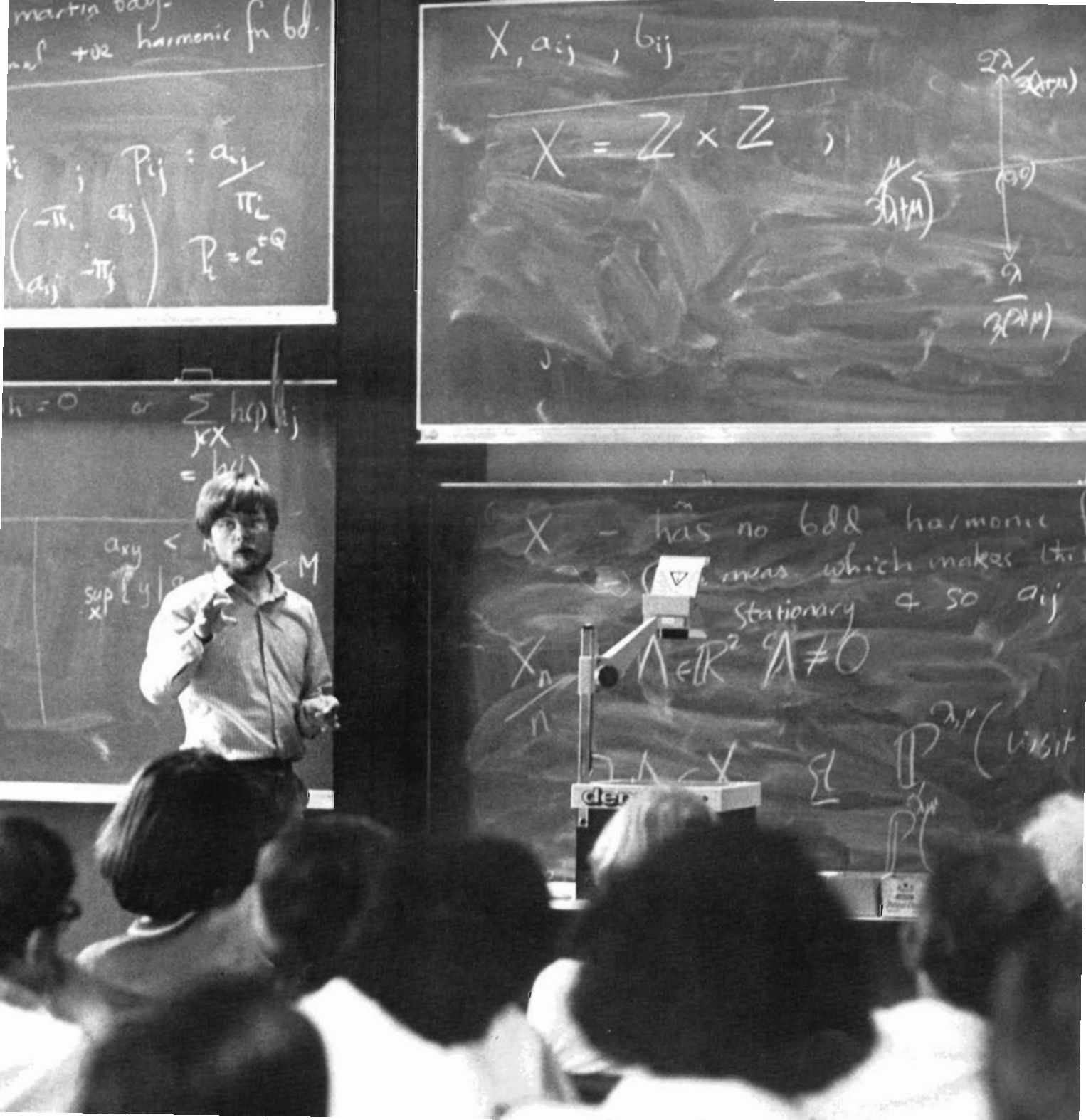
The year 1984 witnessed a double jubilee for the Mathematisches Forschungsinstitut Oberwolfach. The Institute itself can look back upon 40 years of activity, and the Society for Mathematical Research, its legal body, upon 25 years – sufficient reason to present the work of the Institute, which is usually carried on in "splendid isolation", more clearly to a wider public. Only a few specialists will really be able to judge the influence that Oberwolfach has had on mathematical research and education all over the world. But without a doubt German mathematical research owes its consistently excellent international reputation to a considerable extent to this unique institution. Hardly anywhere in the world will one find a similar "emporium" for mathematics nor such a broad spectrum of ideas being-exchanged from highly specialized theory to continuing education for teachers as well as applications in science and technology.

For the State of Baden-Württemberg it is a natural and even pleasant obligation to financially guarantee the continuing operation of one of its most renowned institutes. The present discussion in the Federal Republic on the funding of research and the results obtained by such funding, shows that financing alone is not sufficient. A high degree of specialist knowledge, creativity, and devotion have to be added if first-class results are to be attained. Since its foundation Oberwolfach has had the good fortune to be guided by men with these qualities. Sincere thanks and honourable recognition are due to those who have born the responsibility for the Institute.

Mathematics provides the foundation of almost all modern scientific and technical disciplines. We have become keenly aware of this fact during the last few years, in which dramatic scientific and technological progress has taken place. Fortunately the status of mathematics in school and university education has risen significantly once again. The State of Baden-Württemberg will continue to use its influence to further this development. If our society, with its manifold economic, ecological, and social expectations, is to be humane and at the same time look towards the future, than we will need knowledge, effort, and achievement. It is my wish in the jubilee year 1984 that the Mathematisches Forschungsinstitut Oberwolfach will continue for many years to come to play a vital role in the scientific infrastructure of Baden-Württemberg as well as serving as a centre for learning and communication.



Dr. h. c. Lothar Späth
Premier of the State of Baden-Württemberg


X, a_ij , b_ij
X = Z × Z ,
X - has no bdd harmonic
stationary & so a_ij
Λ ∈ R² Λ ≠ 0

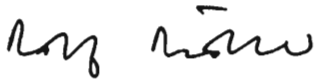
PREFACE

Mathematicians in Germany are rightly proud of "their Oberwolfach", and other disciplines envy them this facility. The Mathematisches Forschungsinstitut has become an international byword for high scientific standards, for international and interdisciplinary exchange of ideas, and for exchanges between established researchers and their junior colleagues. This picture would remain incomplete if I failed to mention the tradition developed at the Institute which now constitutes its spirit, a tradition that by itself governs the progress of the meetings and creates an atmosphere for close personal contacts that go well beyond common professional interests. The secluded site of the Institute deep in the Black Forest allows conversations to develop free from external distractions.

By financing all the buildings the Volkswagen Foundation contributed its share to the development of the old Lorenzenhof into a spacious mathematical research institute. In its present state it has preserved its attractiveness thanks to the traditional Oberwolfach atmosphere. Moreover Oberwolfach has become a virtually incomparable institution thanks to the planning, initiative, and circumspection of its directors, in particular Professor Martin Barner.

In mathematics research is usually promoted through intensive communication rather than by large projects as in so many other disciplines. With this in mind the Volkswagen Foundation has supported many seminars, symposia, and series of symposia. In view of the tight schedule of the Mathematisches Forschungsinstitut Oberwolfach these conferences have usually taken place elsewhere. But a very special relation will always exist between the Foundation and Oberwolfach, since the Foundation's support of mathematics is simply embodied in the Institute. The Foundation considers this special kind of promotion a confirmation for the activity of an independent scientific institution committed to outstanding scientists and the rising generation of scientists.

I hope that in the coming decades the Mathematisches Forschungsinstitut will continue to stimulate the further development of mathematics and to contribute to the increase of knowledge in this field, which is so important also to other disciplines.



Rolf Möller
Secretary-General of the Volkswagen Foundation

PREFACE

The Mathematisches Forschungsinstitut Oberwolfach did not begin its history with a formal charter but simply with the personal experience that mathematical research does not follow a fixed plan nor does it consist of an arbitrary array of finished results bearing no relation to each other. Mathematical research is a difficult process of mutual stimulation, ideas, and conjectures accompanied by confirmation, encouragement, rejection, and corrections, swinging from the general to the individual, from strict deduction to perceivable imagination. At "Oberwolfach", as the Mathematisches Forschungsinstitut is affectionately called all over the world, everything – the organization of conferences, the design of the buildings, the catering, and the administration – has been shaped in accord with this view.

It is in chief part the achievement of the Institute's directors that the original objectives could be realized: Wilhelm Süss, who founded the Institute and moulded its way of working; Theodor Schneider, who together with others designed a new framework for the Institute when everything nearly collapsed on the death of Süss; and finally Martin Barner, who consolidated the achievements and with considerable personal risk and a great deal of effort had the guesthouse and the library building constructed. In these new buildings Martin Barner has strived to maintain the old atmosphere and proven earlier traditions and to adapt these to new requirements resulting from further developments in mathematics.

This direct connection to actual mathematical research is reflected in the involvement of the mathematicians themselves in the administration of the Institute and the organization of the conferences; this explains the worldwide admiration and imitation (*"... the conferences will be similar in structure to those ... held in Oberwolfach ..."*).

On the occasion of the double jubilee the Mathematical Board of the Society for Mathematical Research (Gesellschaft für mathematische Forschung) considered it appropriate to present the eventful history of the Institute, a history already adorned with anecdotes about both the Institute and "the mathematicians". This task has been performed with great care and precision by Professor Barner together with Frau Jeratsch of the Volkswagen Foundation and Frau Windscheid. I feel that the sober and matter-of-fact text clearly presents the courageous and difficult achievement which has produced an important international institution with a successful and productive mathematical record.

Karl Peter Grotemeyer

Professor Dr. Karl Peter Grotemeyer
Chairman of the Mathematical Board

FOREWORD

Some of our guests at the Mathematisches Forschungsinstitut Oberwolfach (Mathematical Research Institute of Oberwolfach) appreciate the Institute as a useful and valuable facility for the promotion of mathematical research, and they think about its existence and functioning only when their own field of research seems to be getting too little attention. Other guests, however, and many who have heard about the Institute wonder how such an institution functions and how it came into existence.

In order to really get to know the Mathematisches Forschungsinstitut Oberwolfach one has to see it at work. As this is not possible for everyone we have illustrated this booklet with quite a number of photographs. On the one hand we would like to address a wider public interested in research, and on the other hand we hope that mathematicians will learn something new about the Institute especially about its history.

Why was such an information booklet not published earlier? Of course a special occasion needed, the more so since – even now – I still observe the fruitful development of the Institute and its work with a certain amazement and awe. Successful research cannot be planned. One can only hope to point out the right direction from time to time. Should one then write anything about the detailed operations of the Institute?

Should not the Institute tell its own tale? Studying the files I came across a letter by a prominent physicist who wrote in 1958, in connection with the maintenance of the Institute, that the Department of Education would be the appropriate authority to turn to, but that such a department would not have very understanding for an institution like Oberwolfach, in fact often an innate distrust towards any innovation and imagination. My personal experience is completely different. Civil servants have not only shown full understanding for this somewhat unusual Institute, but have also made constructive contributions in encouraging its unique character. They have found ways to transform mathematicians' wishes, many of which ar confused or naive, into reality and to represent them before the financial backers. Legislators from the federal parliament and from Baden-Württemberg have also helped the Institute. We owe special thanks to the representative of the Federal Government on our Administrative Council, Dr. Konrad Petersen, as well as to the representatives of the State of Baden-Württemberg.

My connection with the Volkswagen Foundation rest on many years of trust and cooperation. This collaboration began in the early 1960s, thanks to the great understanding which Dr. Gotthard Gambke, then Secretary-General, showed for Oberwolfach and its problems. I surely speak in the name of all mathematicians when I express my sincere thanks to the Volkswagen Foundation, which erected the Institute's buildings and put them at our disposal, and to the State of Baden-Württemberg, which covers the running costs of the Institute.

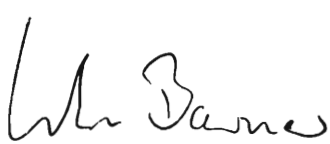
The work of an institute, in which so many people are involved will always be subject to tension arising from the involvement of individuals in their own projects and a necessary understanding for the work and interests of others.

We owe special thanks to those who have managed to involve their own strong personal interest in the common cause. They keep the Institute going.

Many mathematicians have grown into mathematics with the help of the Institute, and they fell a natural bond to it. These ties are carried forward from year to year. Almost every day I require assistance from outside, and such help is provided generously and reliably. It is virtually impossible to thank everyone personally, but my special thanks go to the Institute's Deputy Director, Professor Theodor Schneider.

The staff of Oberwolfach displays a similar devotion to the Institute. Everbody's personal commitment and effort are necessary to keep up the special atmosphere of Oberwolfach. We are indebted to all of them.

This booklet has been written with the help of Dr. Sabine Jeratsch of the Volkswagen Foundation and Barbara Windscheid of the Mathematisches Forschungsinstitut Oberwolfach. The expert advice of Frau Jeratsch has been as helpful as her intensive commitment to this project: our warm thanks to both of them as well as to many other helpers, especially to those working on the English edition of this booklet. We also wish to thank Professor Lederbogen of the University of Karlsruhe for the design and layout of this booklet.



Professor Dr. Martin Barner
Director of the Institute

THE MATHEMATISCHES FORSCHUNGS-INSTITUT OBERWOLFACH

The Mathematisches Forschungsinstitut Oberwolfach (Mathematical Research Institute Oberwolfach) is situated in a quiet side valley of the Black Forest, about 60 km northeast of Freiburg. In the 40 years of its existence it has developed into a centre for intensive collaboration among mathematicians. Coming from various countries and – most important for the fertile continuity of the discipline – from different generations, mathematicians meet here to exchange mathematical ideas, to obtain information on new approaches and methods, and to discuss particular mathematical problems.

Communication and maturation of mathematical ideas need a special atmosphere. One does not assimilate spontaneously new ideas; discussions that follow upon a lecture and may continue for hours are of the greatest importance. Oberwolfach's high reputation abroad probably rests in the first place on the fact that it is ideally suited to fulfilling these conditions: its secluded site, the buildings – functional but in harmony with the landscape – and the deliberately small but international group of participants at the events which usually last for one week, create a special atmosphere that is bound to influence almost every visitor.

Today Oberwolfach is well known wherever mathematical research is pursued. Thus, the Notices (Vol. 29, No 6 p. 582) of the American Mathematical Society state in reference to a series of one-week conferences at Boulder in the summer of 1983: *"The conferences will be similar in structure to those held throughout the year at Oberwolfach."*

To give a sketch of the aims and objectives of the Mathematisches Forschungsinstitut Oberwolfach we will quote from the Grauer Plan (provisional budget) of the German Research Council (Deutsche Forschungsgemeinschaft):

"Finally, we once more point to the extremely important role of the Mathematisches Forschungsinstitut Oberwolfach. The Federal Republic of Germany is envied throughout the world for this scientific institution. The Institute arranges symposia on special fields of mathematics in which the full spectrum of mathematical disciplines is represented. International participation is substantial. Oberwolfach also organisizes smaller-scale workshops in which mathematicians can immerse themselves in rapidly developing branches of the discipline as yet unfamiliar to them. The Institute offers ideal opportunities for brief contacts, especially for the younger generation. The programme is flexible: In contrast to the high degree of specialization in the universities' special research centres (Sonderforschungsbereiche) the most recent developments can be pursued here in their full breadth. In 1981 Oberwolfach hosted 53 conferences. The Institute, a cornerstone of mathematical research in the Federal Republic of Germany needs and deserves strong support in the future".
(DFG, Aufgaben und Finanzierung 1983-86, Grauer Plan VII. Weinheim: Verlag Chemie GmbH, 1983, p. 100).

Organization

The Society for Mathematical Research (Gesellschaft für mathematische Forschung) is legally responsible for the Mathematisches Forschungsinstitut Oberwolfach. The Mathematical Board, which maintains its number by coopting new members, and the Administrative Board are the key committees of this association, which itself consists mainly of the present and former members of the Mathematical Board (see p. 29).

Members of the Executive Committee of the Gesellschaft für mathematische Forschung: Karl Peter Grotemeyer, top; Martin Barner, bottom left; Heinz Kunle, bottom right

View of the Institute buildings from the West

According to the statutes, of the Society, the Mathematical Board
"... is responsible for the basic shape of the programme: it assists the Director of the Mathematisches Forschungsinstitut in preparing and carrying out this programme".

The Board consists of ten to twenty mathematicians, elected for a period of four years. As a rule it meets once a year.

The Administrative Board is responsible for the budget of the Institute. Besides a representative of the paymaster, the Baden-Württemberg Department of Science and Art, the Institute's Director, a representative of the Mathematical Board, the Treasurer of the association, and a representative of the University of Freiburg make up its membership. This Board too meets once a year, usually at the end of November.

The Chairman of the Mathematical Board, the Treasurer, and the Director of the Institute together make up the Executive Committee of the Gesellschaft für mathematische Forschung. At the present time the Executive Committee consists of:

Karl Peter Grotemeyer, Chairman of the Mathematical Board;

Martin Barner, Director of the Mathematisches Forschungsinstitut Oberwolfach;

Heinz Kunle, Treasurer of the Gesellschaft für mathematische Forschung.

The business office of the Institute is at Albertstrasse 24, Freiburg i. Br., in rented premises. Here all the preparations for the meetings of the Institute, including the correspondence with the participants, are carried out.

Also located in Freiburg is the private press that does the Institute's own printing and mimeographing.

Finances

In 1967 and 1974 the Stiftung Volkswagenwerk (Volkswagen Foundation) expanded the Institute's facilities by constructing new buildings. The buildings belong to the Volkswagen

Foundation, which puts them at the disposal of the Mathematisches Forschungsinstitut Oberwolfach; the Institute in turn, is obliged to cover the runnning costs and maintain the buildings and equipment. The budget must provide adequate funds for these expenses.

The Mathematisches Forschungsinstitut Oberwolfach is financed by grants from the State of Baden-Württemberg. (Until 1976 the Federal Government and the State each paid half the costs; this was changed in accordance with a new agreement between the Federal Government and the States). At the end of each fiscal year an account of the Institute's expenditure is presented to the Department of Sciences and Art. The table on page 43 shows the development of the budget in the years 1977 to 1986.

The receipts and expenditure for the catering operation are kept and settled from the Institute budget. Catering expenditure is controlled by the Treasurer and the Assembly of Members of the Society.

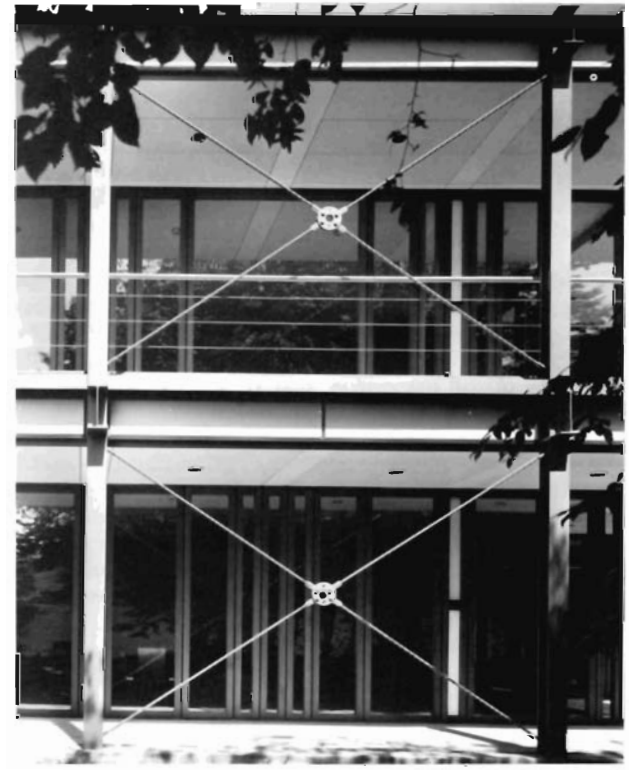
The Buildings of the Institute

The Mathematisches Forschungsinstitut contains three buildings that fit together harmoniously although they were erected at different times and by different architects.

The most recent structure houses the library and lecture halls. It stands on the site of the old manour house, "Lorenzenhof", the original nucleus of the Mathematisches Forschungsinstitut Oberwolfach, and contains the large auditorium, several discussion rooms, reading rooms, and studies, a music room and the library, which fills the whole lower level.

The building is constructed on a hillslope: the massively built rear half projects into the hill and contains the library's stacks; the lower side hangs over the valley as an angular but gracious two-storeyed construction of steel and glass that merges into the surroundings. A broad walkway runs the entire way around the building. It serves not only to protect the structure from the elements but also as an ambulatory much used during lecture breaks for fresh air and conversation.

Gallery in front of the discussionrooms and details of the glass-and-steel construction



The guesthouse lies to one side higher up the slope. The ground floor contains the dining hall – including a coffee bar – as well as a large kitchen together with the necessary service and maintenance rooms. To the left of the entrance there is an office area.

The three upper floors contains 39 single rooms, each with closet, bath or shower, and toilet.

The terraced structure allows the upper floors to include large lounges where visitors can meet informally. The individual rooms are well insulated to aid concentration in work. For the same reason the rooms have no telephones, but several public telephone booths are at the disposal of the guests.

The last block contains two four-room flats, two two-room flats, and one one-room flat for long-term visitors and for permanent staff.

View from the North-East, in the foreground: the guest-house
bottom: the staggered building with library and discussionrooms from the South

The Work of the Institute

"The chief task of the Institute is the organization of symposia on special fields of mathematics and neighboring areas. Every year about 20 symposia, each with 30 to 50 participants, take place; in this situation the leading representatives of a special field and their younger colleagues from Germany and abroad meet for about a week. Close personal contact among specialists within a field is absolutely necessary and is becoming even more important as specialisation increases at an ever faster pace."

This quotation from the application to the Volkswagen Foundation of March 4, 1963 is still valid today, as is the following definition of the Institute's objectives:
extended visits by mathematicians from Germany and abroad;
seminars, chiefly for younger mathematicians, to help them become acquainted with new subjects;
meetings of university teachers, secondary-school teachers, and education officials in order to coordinate mathematical education at universities and secondary schools and provide further training courses for secondary-school teachers;

introductory courses by leading scholars in contemporary fields of specialisation that are neglected in Germany;
and the development of a central information exchange for mathematics in conjunction with the Deutsche Mathematiker-Vereinigung (German Mathematical Association).

Instead of the 20 symposia planned in 1963, now about 50 take place every year. The total annual number of paricipants has increased from about 700 in 1967 (the year in which the guesthouse opened) to 2300 now. More than 50% of the guests come from abroad. Each year a special diagram is produced which gives information about the areas of origin of the participants. The diagram for the first half of 1984 is reproduced on page 15.

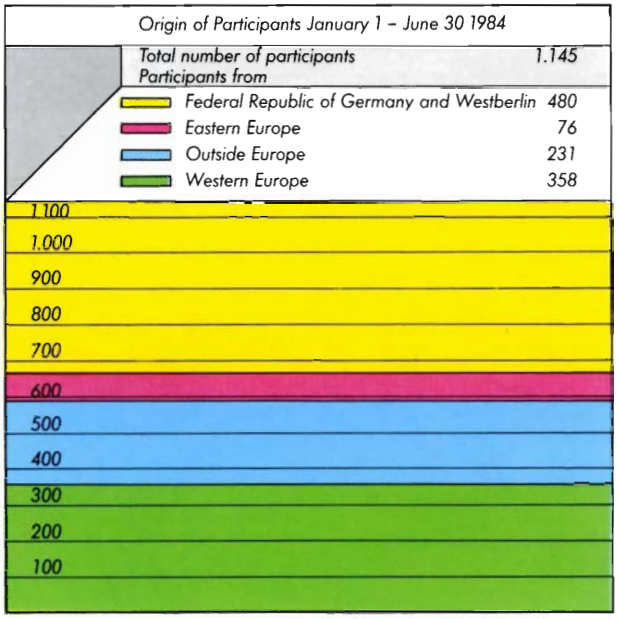
Further on in this booklet special events and the development of the conference activities will be described.

So far it has been possible to invite only a few searchers for tended stays. Whereas the common rooms and particularly the wellequipped library can adequately serve longer-term guests, the accomodation and office space is not sufficient. Nevertheless the management of the Institute is hoping to create facilities for more long-term research visitors and thereby to promote joint projects.

Gerd Fischer (Düsseldorf), as a part of his activities for the Deutsche Mathematiker-Vereinigung (German Mathematical Association) has created the DMV-Seminars in order to introduce young mathematicians to contemporary fields of research. Since 1981 these seminars have taken place in Schloß Mickeln (Düsseldorf-Himmelgeist) and Schloß Thurnau (near Bayreuth). They are supported by the Volkswagen Foundation and organized in co-operation with the Mathematisches Forschungsinstitut Oberwolfach.

As a central information bureau for mathematics, the Institute publishes a series of information pamphlets – partly in co-operation with the Deutsche Mathematiker-Vereinigung – including a list of all German mathematics departments with their staff and an international conference calendar (European Mathematical Newsletter).

The library, which occupies the whole lower floor of the lecture building, is essential to the work of the Institute. It offers all the monographs and journals needed for research; the collection contains about 17 000 monographs and 400 periodicals in



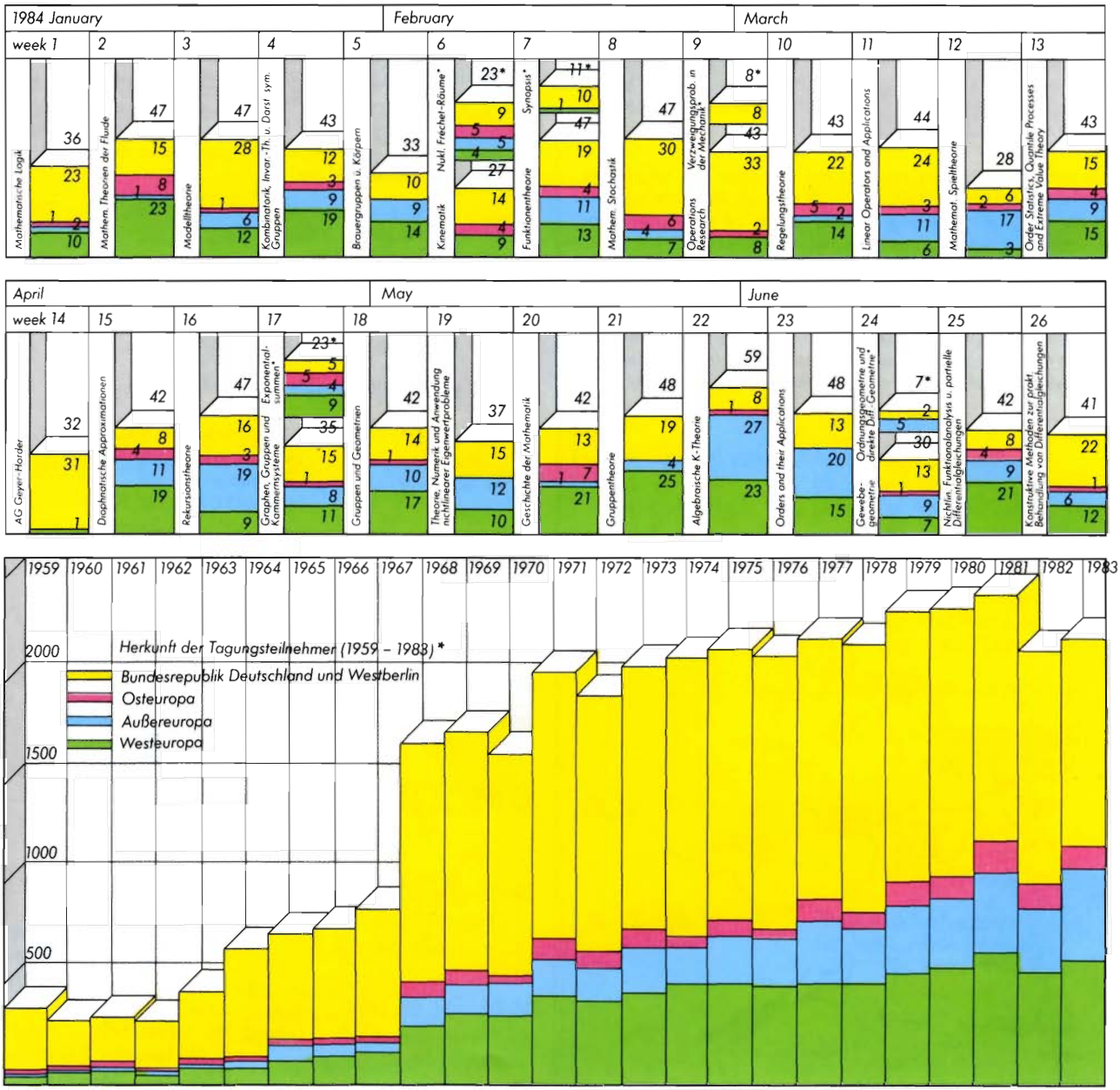
14 000 volumes as well as the most important reference works. At the present time 350 periodicals are received regularly. The library is run as a reference library.

In the entrance hall of the library there is a permanent exhibition, where quiet a few publishers present their new mathematical books. After several months the books are entered into the library free of charge.

One concern of the Institute is its open collection of doctoral theses. The mathematics departments of West German Universities send one copy of each thesis to Oberwolfach.

Planning the Conference Programme

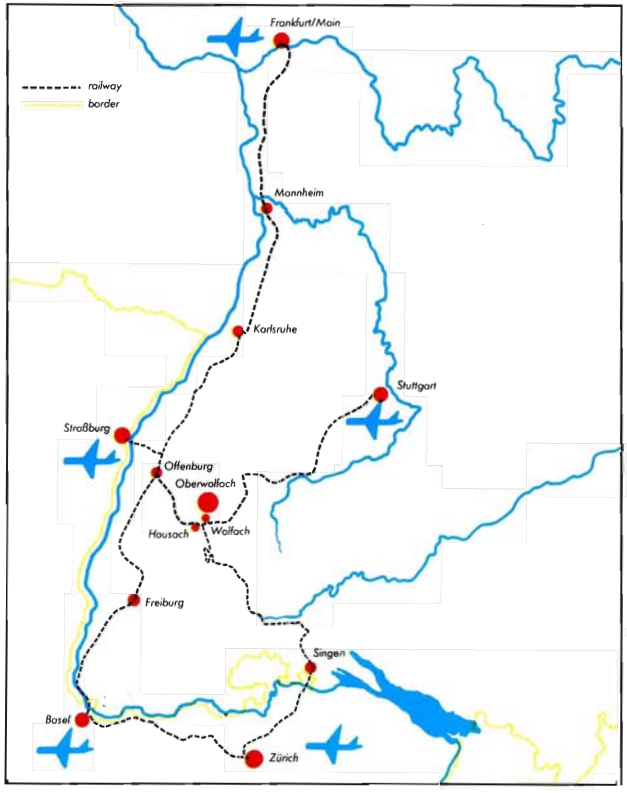
The Mathematical Board meets once a year, on the Saturday of the last week of lectures in the winter semester in Baden-Württemberg. For example, at the meeting on February 16, 1985 the Institute management presents a proposal for the conference programme for 1987. Based on this and with the assistence of further material such as the diagrams on pages



* *Origin of Participants (1959 – 1983)*
Federal Republic of Germany and Westberlin
Eastern Europe
Outside Europe
Western Europe

35 – 37 the Mathematical Board recommends a programme of about 45 conferences. Some weeks are left free for unforeseen developments. The Institute then attempts to draft a well-balanced plan, considering suggestions from within the Board and from outside in such a way that all areas of mathematics can have access to Oberwolfach.

Of course a tradition has formed that meetings on certain mathematical topics take place at regular intervals of two, three, four, or more years. Every group of mathematicians devoted to a field that has once met in Oberwolfach would like to repeat this experience. Although such a wish confirms the quality of Oberwolfach's working environment, it may conflict with the Institute's obligation to give new fields an opportunity: sometimes difficult decisions have to be made. But those fields which currently are not experiencing exciting developments deserve continuing support. Experience has shown that new and interesting developments may occur in fields of mathematics that have been considered closed.



During the months following the meeting of the Mathematical Board its suggestions are followed up, details are clarified, and dates fixed; the programme for 1987 can then be published in summer 1985. For example, the programme for the second half of 1984 is presented below:

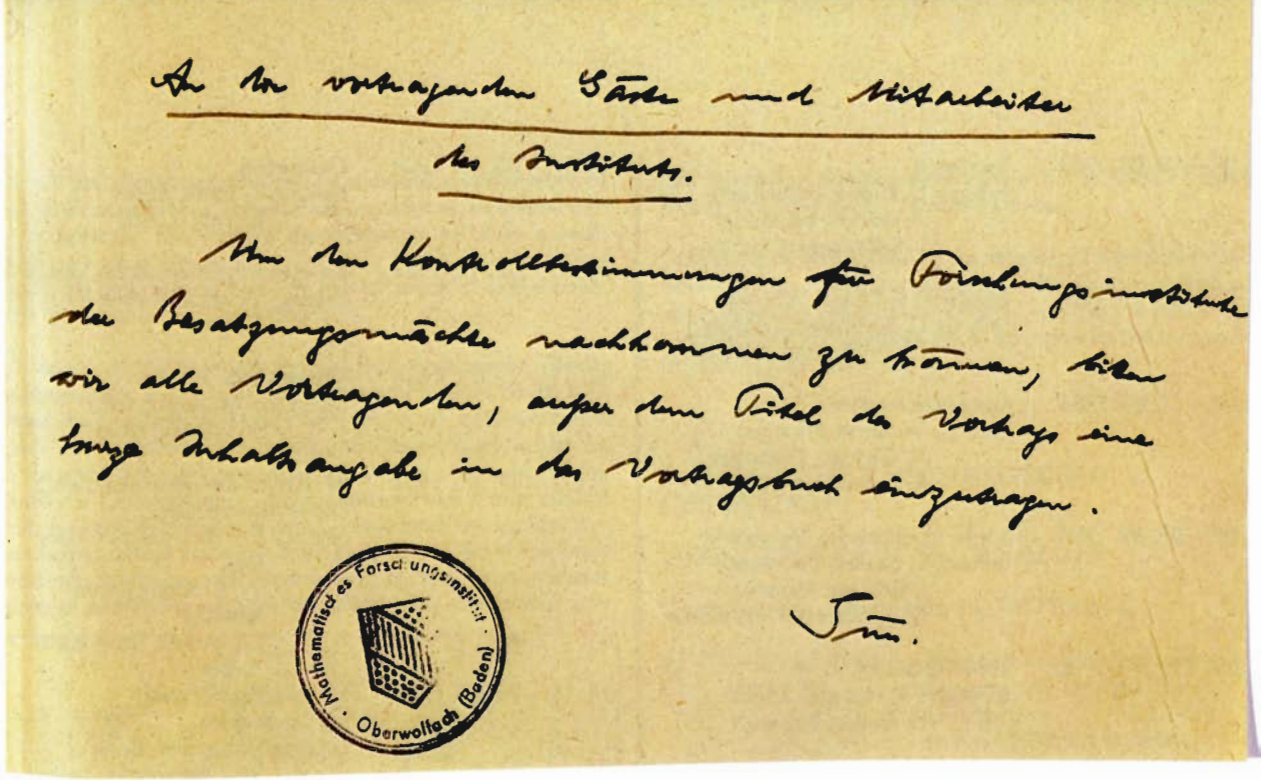
MATHEMATISCHES FORSCHUNGSINSTITUT
OBERWOLFACH

TAGUNGSPROGRAMM 1984, 2. HALBJAHR

Geschäftsstelle: Albertstraße 24, 7800 Freiburg

01. 07. – 07. 07. 1984	Integrierbare Hamiltonsche Systeme und algebraische Geometrie Leitung: H. Knörrer, Bonn P. van Moerbecke, Waltham
08. 07. – 14. 07. 1984	Graphentheorie Leitung: W. Mader, Hannover G. Ringel, Santa Cruz
15. 07. – 21. 07. 1984	Konvexe Körper Leitung: R. Schneider, Freiburg G. C. Shephard, Norwich J. M. Wills, Siegen
22. 07. – 28. 07. 1984	Potentialtheorie Leitung: H. Bauer, Erlangen W. Hansen, Bielefeld
29. 07. – 04. 08. 1984	Variationsrechnung Leitung: J. Frehse, Bonn W. Jäger, Heidelberg F. Tomi, Heidelberg
05. 08. – 11. 08. 1984	Algebraische Zahlentheorie Leitung: W. Jehne, Köln H. W. Leopoldt, Karlsruhe P. Roquette, Heidelberg

12. 08. – 18. 08. 1984	Topologie Leitung: D. Puppe, Heidelberg A. Ranicki, Edinburgh L. Siebenmann, Orsay
19. 08. – 25. 08. 1984	Algebraic K-Theory of Spaces Leitung: D. Burghelea, Columbus F. Waldhausen, Bielefeld
26. 08. – 01. 09. 1984	Komplexe Analysis Leitung: W. Barth, Erlangen H. Grauert, Göttingen R. Remmert, Münster
02. 09. – 08. 09. 1984	Reelle algebraische Geometrie Leitung: E. Becker, Dortmund L. Bröcker, Münster M. Knebusch, Regensburg
09. 09. – 15. 09. 1984	Robust Statistics Leitung: F. R. Hampel, Zürich H. Rieder, Bayreuth
16. 09. – 22. 09. 1984	Risikotheorie Leitung: H. Bühlmann, Zürich W. S. Jewell, Berkeley J. Jung, Stockholm E. Neuburger, München
23. 09. – 29. 09. 1984	Kombinatorische Geometrie Leitung: A. Dress, Bielefeld J. M. Wills, Siegen
07. 10. – 13. 10. 1984	AG Geyer-Harder 4-dimensionale Mannigfaltigkeiten Leitung: M. Kreck, Mainz W. Singhof, Köln
14. 10. – 20. 10. 1984	Analytische Zahlentheorie Leitung: H.-E. Richert, Ulm W. Schwarz, Frankfurt E. Wirsing, Ulm
21. 10. – 27. 10. 1984	Nichtlineare Evolutionsgleichungen Leitung: S. Klainerman, New York W. von Wahl, Bayreuth
28. 10. – 03. 11. 1984	Geometrie Leitung: D. Ferus, Berlin K. Voss, Zürich
03. 11. – 04. 11. 1984	European Mathematical Council Leitung: Sir Michael Atiyah, Oxford
04. 11. – 10. 11. 1984	Stochastische Analysis Leitung: J. M. Bismut, Paris H. Föllmer, Zürich
11. 11. – 17. 11. 1984	Flächen in der geometrischen Datenverarbeitung Leitung: R. E. Barnhill, Salt Lake City W. B. Böhm, Braunschweig J. Hoschek, Darmstadt
18. 11. – 24. 11. 1984	Fortbildungslehrgang für Studienräte Leitung: H. Karcher, Bonn W. Oberschelp, Aachen
25. 11. – 01. 12. 1984	Effiziente Algorithmen Leitung: K. Mehlkorn, Saarbrücken W. Paul, San José H. Walter, Darmstadt
02. 12. – 08. 12. 1984	Mathematische Modelle in der Biologie Leitung: K. P. Hadeler, Tübingen W. Jäger, Heidelberg
09. 12. – 15. 12. 1984	Multigrid Methods Leitung: D. Braess, Bochum W. Hackbusch, Kiel U. Trottenberg, Essen
16. 12. – 22. 12. 1984	Funktionalgleichungen Leitung: J. Aczél, Waterloo W. Benz, Hamburg J. Rätz, Bern



Preparation and progress of a Conference

About one year in advance of a conference each potential participant receives a personal invitation together with a map and directions to Oberwolfach (see map on p. 16)

The list of participants is agreed by the Institute and the organizers of the particular conference. Each invitation indicates the special character of Oberwolfach conferences:

"The conferences of the Mathematisches Forschungsinstitut Oberwolfach especially emphasize the exchange of ideas and the discussion of new methods and results or ones which are still being developed. Accordingly the lecture programme will be determined individually in the course of each conference. As some time should be kept free for discussions (in plenary session, in groups, or among individuals), the number of lectures may possibly have to be limited."

About six weeks before his arrival each participant receives detailed information about the conference, including a list of the other participants and the proposed lecture topics. If he so wishes he will be sent a ticket for the railway journey to Hausach/Kinzigtal (via Offenburg). As a rule the Institute covers only the cost of second-class rail travel within West Germany. This rule applies also to visitors from overseas. The remaining 12 km to the Institute present few problems. As several participants often arrive together at Hausach, they can share a taxi to the Institute.

In the entrance of the guesthose a notice board directs the guest to his room, which will have its own toilet and bath or shower. The room offers a place to work without noise, telephones, or other distractions. A short information leaflet outlines the daily programme.

Before and during the first meal on Sunday evening old acquaintances are renewed and introductions take place. Labelled napkins determine the seating arrangements around the round tables of six. Before each meal the napkins are

Fly-leaf from lecture book No. 2, in the handwriting of Wilhelm Süss

1.11.1946 Haydn, Symphonie m.d. Paukenschlag | H. Cartan
H. Boerner

Bach, Wohlt. kl. I, b-moll, II, fis-moll — H. Cartan
I, f-moll — H. Boerner

Beethoven, Sonate op. 109

~~Bach, W~~

1.11.1946 Théorie de Galois pour les corps non commutatifs

~~Soit~~ K ~~un~~ corps non commutatif, et un sous-corps K_0 ; K est galoisien sur K_0 si :

1° K_0 est le sous-corps des invariants d'un groupe G d'automorphismes de K

2° K est de rang fini sur K_0, comme espace vectoriel à gauche (ou à droite ; on peut montrer que si la condition 1° est satisfaite, les rangs à gauche et à droite sont égaux).

Dans ces conditions, soit Γ le groupe de tous les automorphismes intérieurs

$$x \to \sigma_k(x) = k x k^{-1},$$

alors $G/G\cap\Gamma$ est d'ordre fini n ; les $k \in K$ tels que ~~$\sigma_k \in G$~~ les σ_k laissent invariants les éléments de K_0 ~~sont les~~ (combinaisons linéaires, à coefficients dans le centre C, des k tels que $\sigma_k \in G$; tout automorphisme de K qui laisse invariants les éléments de K_0 a la forme $\omega \cdot \sigma_k$, où $\omega \in G$ et $k \in K_0^*$; enfin, si d désigne le rang de K_0^* sur C, et r le rang de K sur K_0, on a

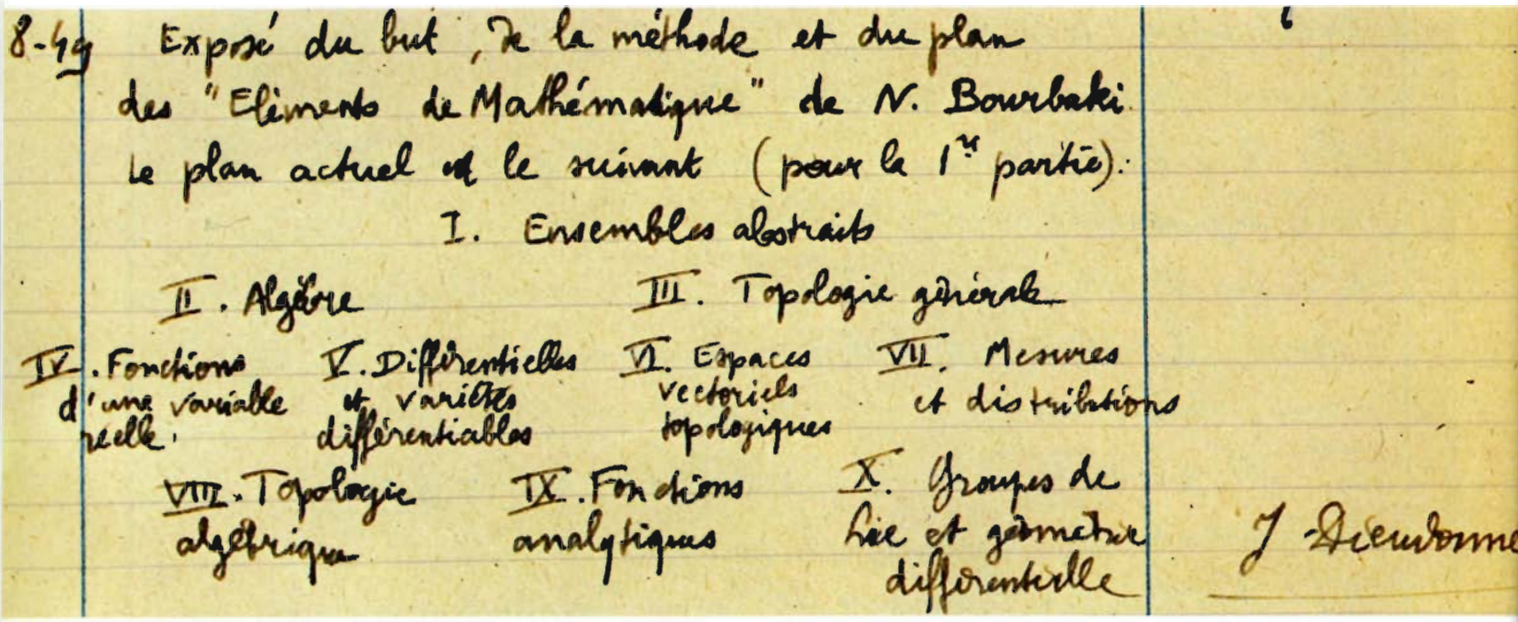
$$\boxed{r = n + d - 1}$$

(le cas de K commutatif correspondant à $d = 1$, $r = n$)

Tout sous-corps K' tel que $K_0 \subset K' \subset K$ est le sous-corps des invariants d'un groupe d'automorphismes ; on obtient ainsi une correspondance biunivoque entre les K' tels que $K_0 \subset K' \subset K$ et les sous-groupes "complets" du groupe de tous les automorphismes laissant invariants les éléments de K_0. Un groupe G est "complet" si, lorsqu'il contient des automorphismes intérieurs σ_{k_i}, il contient aussi tout σ_k tel que

$$k = \sum c_i k_i \quad (c_i \in C).$$

H. Cartan


8-49 Exposé du but, de la méthode et du plan des "Eléments de Mathématique" de N. Bourbaki. Le plan actuel est le suivant (pour la 1re partie):

I. Ensembles abstraits

II. Algèbre

III. Topologie générale

IV. Fonctions d'une variable réelle

V. Différentielles et variétés différentiables

VI. Espaces vectoriels topologiques

VII. Mesures et distributions

VIII. Topologie algébrique

IX. Fonctions analytiques

X. Groupes de Lie et géométrie différentielle

J. Dieudonné

shuffled and redistributed. Visitors are especially fond of this ritual as it constantly changes one's table companions.

In addition to the regular meals food and drink are available in small self-service areas. Although it is often necessary to hunt for things, the old hands are ever ready to help the newcomers, which in turn leads to more contact among the guests. The schedule of lectures is deliberately not planned in advance but just from day to day in order to leave sufficient space for unexpected interesting developments and extensive discussions.

Every speaker enters a short summary of his paper into the Vortragsbuch (book of lectures). A few examples follow:
Henri Cartan of Paris gave the first lecture in a language other than German on November 11, 1946. It is interesting to note that musical presentations were also listed in those days, as is shown by the reproduction of a full page from the Vortragsbuch (on p. 19, from Vortragsbuch No. 1, p. 30).

At a meeting between French and German mathematicians Jean Dieudonne presented the Bourbaki group (Vortragsbuch No. 2, p. 17).

In May 1983 Gerd Faltings of Wuppertal presented for the first time his proof of the Tate conjecture. In particular his French colleagues recognized immediately the great importance of the results. A short time later Faltings was able to prove the Mordell conjecture by similar methods – to his own surprise, as he said. He presented his new results in August 1983 (p. 21; Vortragsbuch No. 60, p. 27). Thus a problem had been solved which many of the best mathematicians had attempted for more than 60 years.

The Vortragsbuch shows also that in many meetings English is used almost exclusively, although there are no rules about language at Oberwolfach.

A report is prepared after each conference consisting of a short summary of the essential points that arose in the meeting

The Conjectures of Tate & Mordell

The main technical point in the proof of these conjectures is the determination of a height-function on the moduli-space of principally polarized abelian varieties. The result is as follows:
If

$$p: A \longrightarrow \mathrm{Spec}(R) \qquad (R = \text{integers of a number field } K)$$

is a semiabelian variety, such that the general fibre is proper and principally polarized, the height of the corresponding point in the moduli-space can be estimated by the following quantity:
Let

$$s: \mathrm{Spec}(R) \longrightarrow A$$

be the zero-section, $\omega_{A/R} = s^*(\Omega^g_{A/R})$.
Then $h(A) = \deg(\omega_{A/R})$

The degree has to be taken (according to Arakelov) in the sense of metricised line-bundles, and the metrics at the infinite places are given by square-integration.
We have to consider the behaviour of $h(A)$ under isogenies. We get that it does not change very often, for example if we divide A by the points of an l-divisible subgroup or by an l-group with l big. By the usual arguments this implies the Tate-conjecture over number-fields.
To derive the Shafarevich-Conjecture (which implies Mordell), one has first to prove that there are only finitely many abelian varieties with prescribed set of bad reduction, up to isogeny. For this one uses a Tchebotarev-argument. The rest is then easy.
Everything can be extended to finitely generated extensions of $\mathbb{Q}$.

Gerd Faltings (Wuppertal)

21

followed by summaries of the individual lectures. Each participant is sent the reports from his meeting; many mathematics departments and libraries receive collections of these reports.

Although it would be easy to publish the conference proceedings in book form, the Institute deliberately retrains from doing so as a further means of stimulating participants to discuss ideas and methods that are still being developed rather than to present polished results. Nevertheless, for some conferences proceedings are edited by the organizers, at present about ten volumes per year.

We cannot determine how many or which publications have been initiated by meetings at Oberwolfach nor can we pursue here the interesting question as to which fields have undergone rapid evolution and in which years. Many times the plan for a book has originated in Oberwolfach or was developed further there, in particular when several authors have been involved. Here plans for the publication of serials and journals have been discussed: in the early days of the Institute Studia Mathematica and Archiv der Mathematik; during the 1960s Perspectives in Mathematical Logic; and recently the series Grundwissen der Mathematik.

The outsider may ask himself what the special impact of Oberwolfach is. To be sure the exchange of information between experts has some importance. For the mathematician, who as a rule works alone, much like an introvert, it is of great importance to present his ideas to others. He needs this recognition of his work and can better determine his own position in the ranks of mathematics and see what the competition in his field is.

It is important that problems can be followed through; that discussions can be continued, and that there is sufficient time for the exchange of mathematical experience. Information that clarifies which methods and apparent solutions are not feasible for a given problem is invaluable in the sciences and especially in mathematics. Personal contacts develop that influence not only the scientific life of a mathematician but also his human personal relationship: not a few mathematicians have been introduced into their discipline's community by presenting results in Oberwolfach and have thus begun a scientific career.

Wilhelm Süss, founder of the Institute

THE GESELLSCHAFT FÜR MATHEMATISCHE FORSCHUNG

The Foundation of the Society (1959)

In 1984 the Gesellschaft für mathematische Forschung (Society for Mathematical Research) celebrated its 25th anniversary. It was founded on June 17, 1959 by 15 mathematics professors in order to provide a legal foundation for the Mathematisches Forschungsinstitut Oberwolfach. On July 14, 1959, the Society was entered into the official Register of Associations and Societies in Freiburg. The preamble to its statutes reads as follows:

"The aim of the Gesellschaft für mathematische Forschung is to provide research facilities for mathematics in Germany similar to those provided by various institutions in other countries and following the tradition of mathematical communication and exchange started by Wilhelm Süss in Oberwolfach. The Society shall form a centre of scientific cooperation among members of different generations and facilitate the exchange of ideas with foreign researchers."

The founding members of the Society were the following mathematics professors, whose photographs are reproduced on pp. 24.

Reinhold Baer, Frankfurt
Heinrich Behnke, Münster
Gerrit Bol, Freiburg
Helmuth Gericke, Freiburg
Henry Görtler, Freiburg
Friedrich Hirzebruch, Bonn
Hellmuth Kneser, Tübingen
Gottfried Köthe, Heidelberg
Wilhelm Maak, Göttingen
Claus Müller, Aachen
Peter Roquette, Saarbrücken
Theodor Schneider, Freiburg
Emanuel Sperner, Hamburg
Karl Stein, München
Karl Heinrich Weise, Kiel.

They were also the first members of the Society's Mathematical Board, which held its first meeting on June 17, 1959. Hellmuth Kneser was elected Chairman and Gottfried Köthe and Gerrit Bol Deputy Chairmen. Theodor Schneider was appointed Director of the Mathematisches Forschungsinstitut Oberwolfach, Helmuth Gericke Deputy Director, and Karl Heinrich Weise Treasurer.

The formal inaugural session was preceded by a meeting in March, the minutes of which follow verbatim along with the photographs and signatures of the founding members.

"Mathematisches Forschungsinstitut Oberwolfach
Minutes of the meeting of March 11, 1959

On March 11, 1959 the undersigned mathematicians gathered at the Mathematisches Forschungsinstitut Oberwolfach to discuss the present state and further development of the Institute.

The participants agreed that the present situation in mathematics in comparison to the development abroad and the situation in other field necessitates the creation of a national institution with the following objectives:

1) the intensification of mathematical research;
2) the promotion of collaboration among mathematicians;
3) further training of young researchers.

The foundation of a Society for Mathematical Research at the Oberwolfach Institute appears to an appropriate step in this direction.

This institute is already highly regarded for its cultivation of collaboration among mathematicians, and it is well suited as a starting point and centre for the tasks listed above.

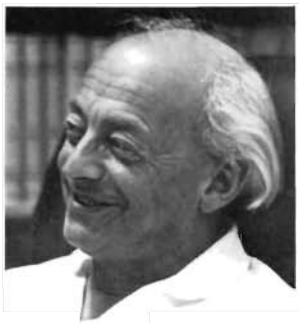
The following program conclusions have been reached. With regard to objective:

1) The Institute should offer facilities to visiting researchers from Germany and abroad to freely pursue their own individual work or to collaborate in groups. Visiting researchers should not stay longer than two years.

2) The promotion of co-operation through conferences and symposia should be intensified.

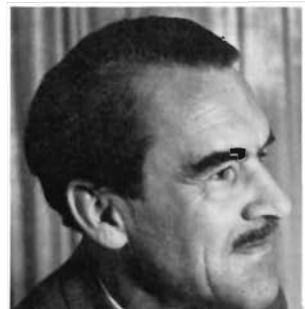
3) The Institute should provide further training for postdoctoral mathematicians, in particular by organizing special workshops and courses led by outstanding researchers.

For the successful fulfilment of these objectives it is essential to enlarge the buildings and to hire additional staff.



(R.Baer)

(G.Bol)



(H.Görtler)

(H.Knesser)

(H.Behnke)

(H.Gericke)

(F.Hirzebruch)

(G.Köthe)

After its enlargement the Institute will be able to fulfill the last two objectives efficiently and the first one to some extent. The intensification of research will probably require a new bulding in the neighbourhood of the university city of Freiburg.

As a "Registered Association" the Society should be able to obtain its funds from the Federal Department of the Interior, the Baden-Württemberg Department of Education and possibly other appropriate donors. Funding through research contracts that are not too narrowly defined will also be considered (cf. Deutsche Forschungsgemeinschaft, Fraunhofer Gesellschaft)."

At this meeting in March the statutes of the Society were also discussed and, after revision and consultations with lawyers in Freiburg and the appropriate government departments, the statutes were formally accepted at a meeting on April 26, 1959 in Heidelberg. In 1965 the statutes were revised and simplified in the light of experience and the number of committees reduced from the original six to four. Later revisions were concerned only with changes of name and the elimination of the seat of the federal government's representative on the Administrative Board.
(Federal financial support ceased in 1977).

(W.Maak)

Roquette
(P.Roquette)

(K.Stein)

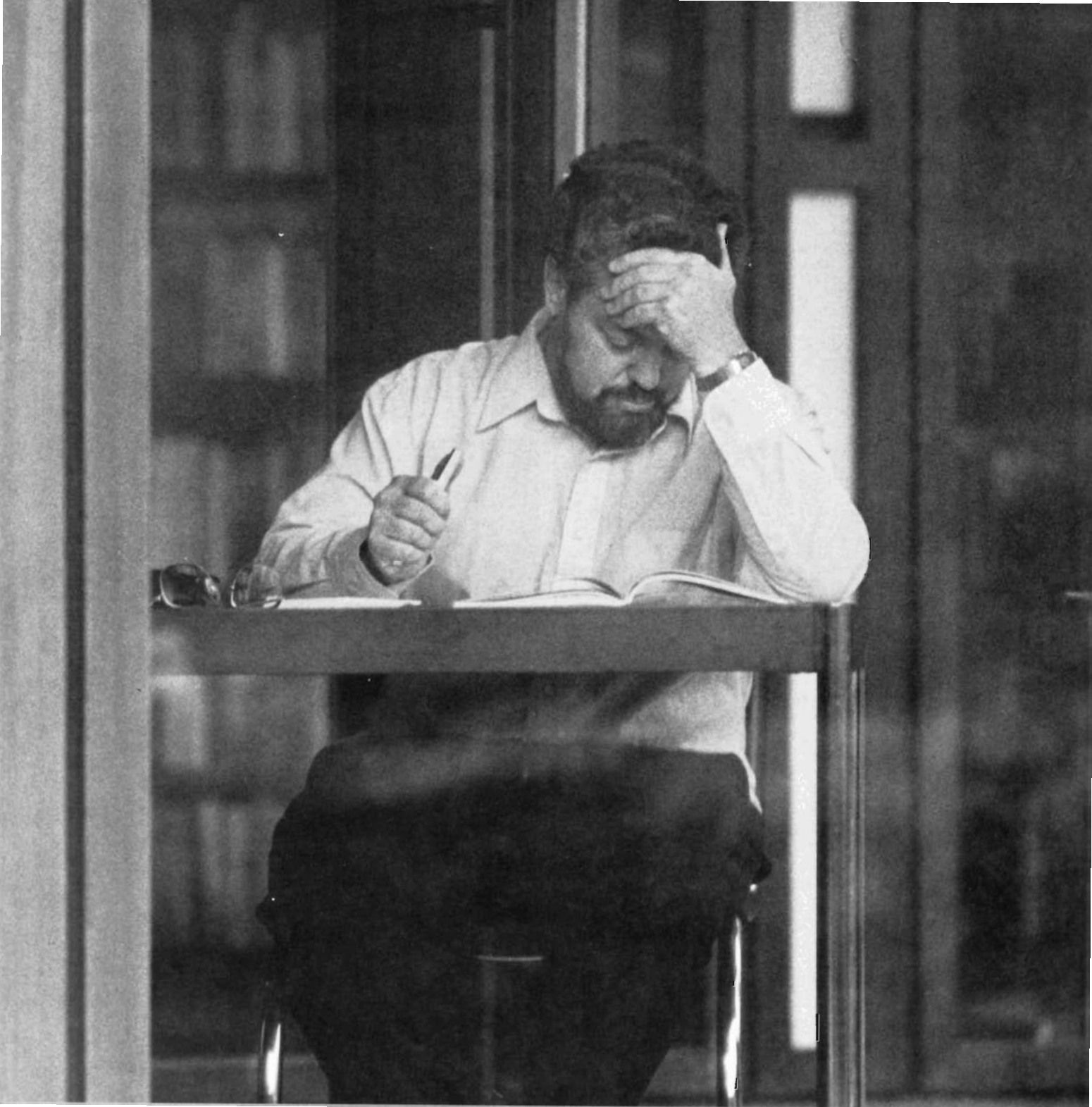
Th. Schneider

Theodor Schneider,
Director of the Institute
1959 to 1963,
since then Deputy Director

(Claus Müller)

(E.Sperner)

(K.H.Weise)



Statutes of the Gesellschaft für mathematische Forschung e. V.
(Society for Mathematical Research)
(for preamble, see p. 23)

§ 1 Name and Location of the Society

The Gesellschaft für mathematische Forschung e. V. (Society for Mathematical Research), thereafter called "the Society", is located in Freiburg im Breisgau and is registered there. The financial year is the calendar year.

§ 2 Object of the Society

The Society undertakes directly and exclusively non-profit activities in accordance with the regulations for non-profit organizations of December 24, 1953, namely:
1. the intensification of mathematical research;
2. the promotion of collaboration among mathematicians;
3. advanced training in mathematics and neighbouring fields.
These objectives are to be pursued on an international level. Any financial surplus must be used exclusively for the statutory purposes of the Society. Members shall receive no share of any surplus, nor shall they receive any allowance out of the Society's funds. On dissolution of the Society or on resignation members shall receive not more than their invested capital and the simple value of their contributions in kind. No person shall be reimbursed for expenses incurred in activities foreign to the Society's objectives, nor shall any person receive disproportionately high payments.

§ 3 Mathematisches Forschungsinstitut Oberwolfach

The Society is the legal body of the Mathematisches Forschungsinstitut Oberwolfach – hereafter called MFI. The MFI is governed by its Director or in his absence by one or more Deputy Directors.

§ 4 Membership

Individuals or institutions which support the aims of the Society may become members. The Executive Committee admits members in conjunction with the Administrative Board. There shall be ordinary and honorary members. Individuals can be named honorary members in recognition of extraordinary contributions to furthering the aims of the Society. Honorary members do not pay membership fees.
Membership ceases:
1. through death
2. through resignation. Resignation is possible only at the end of a financial year; resignations must be submitted in writing at least one month in advance to the Executive Committee.
3. through expulsion. If it can be determined that a member continually fails to honour his commitments towards the Society or if his continued membership is deemed detrimental to the Society for other important reasons, then expulsion is permissible. After the member in question has been granted a hearing, the matter is decided by the Executive Committee in consultation with the Mathematical Board and the Administrative Board.
The Assembly of Members shall determine the level of membership fees.

§ 5 Organs of the Society

The organs of the Society shall be:
1. the Executive Committee;
2. the Mathematical Board;
3. the Administrative Board;
4. the Assembly of Members.

§ 6 The Executive Committee

The Executive Committee shall consist of:
1. the Chairman of the Mathematical Board;
2. the Treasurer;
3. the Director of the MFI.
The Executive Committee shall elect a Chairman and a Deputy Chairman from among its members for a period of two years. The Director of the MFI may not become Chairman nor may he hold any other of the offices mentioned in the first paragraph. The Chairman of the Executive Committee and the Director of the MFI, either jointly or alone, can represent the Society in the sense defined by paragraph § 26 BGB. The Executive Committee shall prepare its own agenda. The minutes of the Executive Committee shall be verified by the Chairman or his Deputy.
The Executive Committee shall take decisions by majority vote, the Chairman having the casting vote in the event of a tie.
The Executive Committee shall be bound by directives jointly agreed upon by the Mathematical Board and the Administrative Board.

§ 7 The Mathematical Board

The Mathematical Board shall consist of at least 10 and no more than 20 members, all of whom shall be mathematicians. It shall be constituted at the inaugural meeting of the Society. Subsequently its members shall be appointed by the Executive Committee on nomination by the Mathematical Board.
The Mathematical Board shall elect a Chairman as well as first and second Deputy Chairmen. From among its members it shall

appoint the Treasurer and a representative to the Administrative Board, both for a term of three years.
The quorum of the Mathematical Board shall be half its members. Decisions shall be taken by a simple majority of the members present; in the event of a tie, the Chairman shall have a casting vote.
The Chairman shall summon a meeting of the Mathematical Board at least once a year and whenever at least one-third of the Board's members demand a meeting. The notice of a meeting together with its agenda shall be sent off at least 14 days in advance. The minutes of any meeting of the Mathematical Board shall be verified by its Chairman or his deputy.
The Mathematical Board shall appoint the Director of the MFI and his deputy in agreement with the Administrative Board. The Mathematical Board shall be responsible for the basic structure of the MFI programme and shall assist the Director of the MFI in its preparation and execution.
The Mathematical Board may delegate certain tasks to committees.

§ 8 The Administrative Board
The Administrative Board shall consist of one representative of Baden-Württemberg Department of Science and Art, one representative of the University of Freiburg, the Director of the MFI, the Treasurer, and one representative of the Mathematical Board. The representative of the University of Freiburg shall be appointed for four years on the nomination of the Mathematical Board and shall be drawn from one of the faculties succeeding the former Faculty of Sciences and Mathematics.
The Administrative Board shall elect from among its members a Chairman and his deputy.

§ 9 The Assembly of Members
The Assembly of Members shall meet at least once a year. It shall be summoned by notice in writing by the Chairman of the Executive Committee, at least two weeks in advance, an agenda accompanying the notice. If the Executive Committee, the Mathematical Board, the Administrative Board, or two-thirds of the Society's members demand a meeting in writing giving a proposed agenda, such a meeting must take place within two months of receipt of the demand.
The Assembly of Members has the following responsibilities:
1. It shall receive and approve the annual report of the Executive Committee after a satisfactory audit has been carried out.
2. It shall decide on any changes in the statutes.
3. It shall take any decisions to dissolve the Society.

The Assembly of Members shall elect a chairman for its meeting. The minutes shall be verified by this chairman.
Every properly summoned Assembly of Members shall be considered quorate. Unless a resolution concerns a change in the statutes or the dissolution of the Society, the decisions shall be taken by majority vote of the members present. In the event of a tie, a decision shall be taken by lot in case of the election of a Chairman; in other cases, the Chairman shall have a casting vote. For a change in the statutes or the dissolution of the Society, the consent of two-thirds of the members of the Society shall be necessary. The view of the members not present shall be obtained in writing. In urgent cases, the Executive Committee can require a written vote. Then the above regulations apply as appropriate. The statutes can be changed only with approval of the Baden-Württemberg Department of Science and Art.

§ 10 Dissolution of the Society
In the event of the dissolution of the Society, the Mathematical Board shall, in agreement with the Administrative Board, dispose of the assets. It may, however, bestow the assets only on nonprofit organizations under the condition that they be applied in accordance to the statutes or for a similar tax-privileged scientific purpose. Decisions on the future use of the assets shall be subject to the consent of the Baden-Württemberg Department of Science and Art and may be carried out only after approval by the revenue office.

Members and Committees

The Mathematical Board (1984)

Martin Barner (since 1962)
Roland Bulirsch, München (from 1985)
Tammo tom Dieck, Göttingen (since 1980)
Albrecht Dold, Heidelberg (since 1966)
Hans Föllmer, Zürich (since 1983)
Karl Peter Grotemeyer, Bielefeld (since 1965)
Günther Hämmerlin, München (since 1980)
Günter Harder, Bonn (since 1972)
Stefan Hildebrandt, Bonn (since 1981)
Willi Jäger, Heidelberg (since 1983)
Hermann Karcher, Bonn (since 1983)
Otto H. Kegel, Freiburg (from 1985)
Manfred Knebusch, Regensburg (since 1984)
Heinz Kunle, Karlsruhe (since 1962)
Jürgen Moser, Zürich (since 1981)
Robert Lutz, Mulhouse (since 1981)
Reinhold Remmert, Münster (since 1977)
Theodor Schneider, Freiburg (since 1959)

Other Members of the Society
(in parentheses: term on the Mathematical Board)

Reinhold Baer †, Frankfurt (1959–1967)
Heinz Bauer, Erlangen (1967–1982)
Heinrich Behnke †, Münster (1959–1973)
Walter Benz, Hamburg (1973–1984)
Gerrit Bol, Freiburg (1959–1965)
Peter Gabriel, Zürich (1977–1983)
Helmuth Gericke, Freiburg (1959–1962)
Henry Görtler, Freiburg (1959–1964)
Wolfgang Haack, Berlin (1965–1971)
Hans Hermes, Freiburg (1963–1980)
Friedrich Hirzebruch, Bonn (1959–1967)
Konrad Jacobs, Erlangen
Hellmuth Kneser †, Tübingen (1959–1969)
Martin Kneser, Göttingen (1968–1979)
Heinz König, Saarbrücken (1965–1980)
Gottfried Köthe, Heidelberg (1959–1965)
Klaus Krickeberg, Paris
Hans Peter Künzi, Zürich (1972–1975)
Wilhelm Maak, Göttingen (1959–1963)
Günter Meinardus, Mannheim (1975–1983)
Dietrich Morgenstern, Hannover (1975–1982)
Claus Müller, Aachen (1959–1968)
Georges Reeb, Straßburg (1969–1980)
Peter Roquette, Heidelberg (1959–1964)
Fridrich W. Schäfke, Konstanz (1972–1979, Member until 1983)
Friedrich Sommer, Bochum (1965–1972)
Emanuel Sperner †, Hamburg (1959–1972)
Karl Stein, München (1959–1967)
Eduard L. Stiefel †, Zürich (1965–1968)
Heinz G. Tillmann, Münster (1966–1977)
Karl Heinrich Weise, Kiel (1959–1981)

Corporate Members

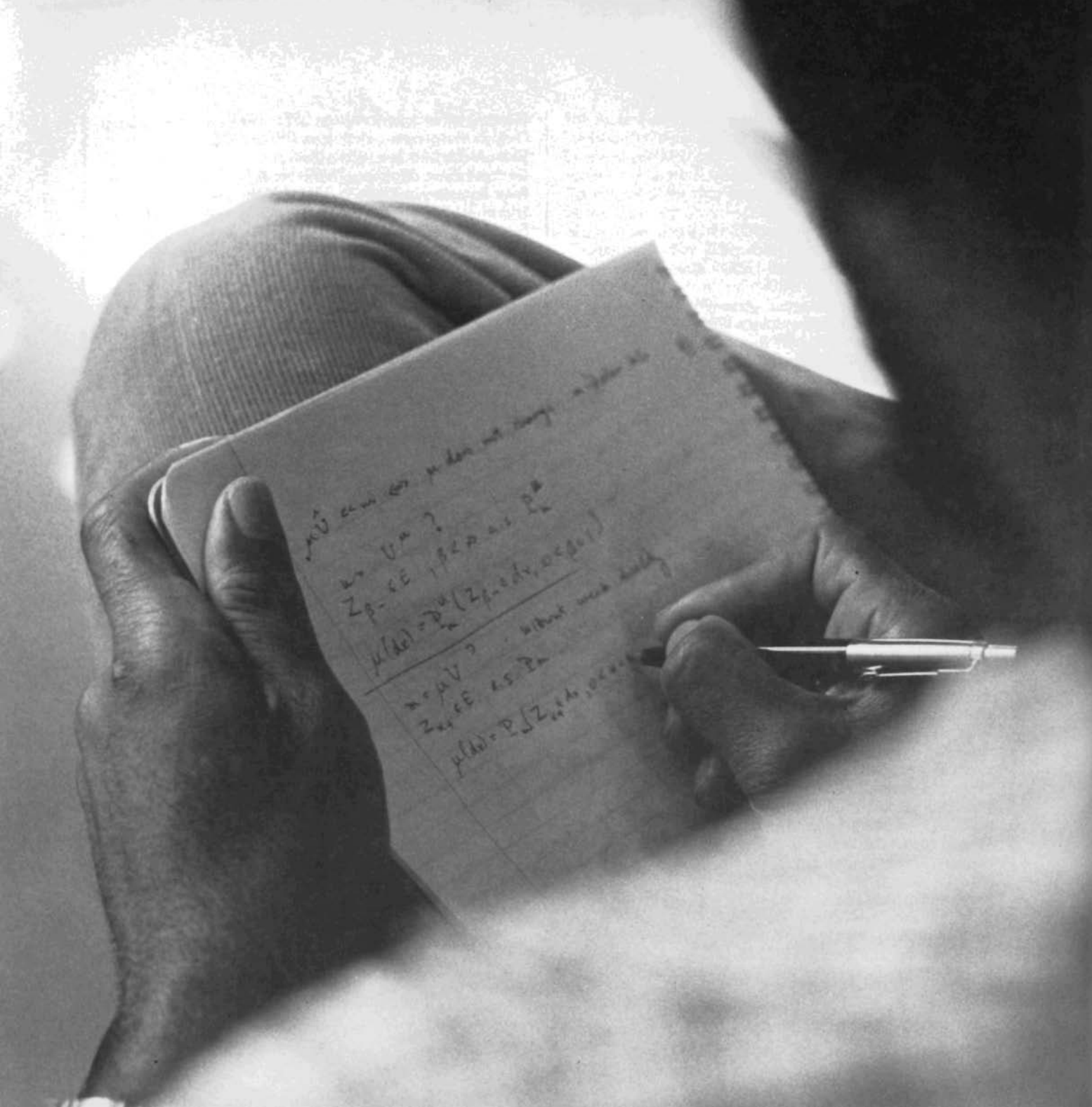
German Mathematical Association
Society for Applied Mathematics and Mechanics

The Administrative Board (1984)

Dr. Erwin Schömbs, Stuttgart, representative of the Baden-Württemberg Department of Science and Art
Professor Dr. Rudolf Nitsche, Freiburg, representative of the University of Freiburg
Martin Barner, Freiburg, Director of the Institute
Heinz Kunle, Karlsruhe, Treasurer
Karl Peter Grotemeyer, Bielefeld, representative of the Mathematician Board.

The Executive Committee (1984)

Karl Peter Grotemeyer, Chairman of the Mathematical Board
Heinz Kunle, Treasurer
Martin Barner, Director of the Institute



HISTORY OF THE MATHEMATISCHES FORSCHUNGSINSTITUT OBERWOLFACH

The Early Years (1944–58)

The Mathematisches Forschungsinstitut in Oberwolfach was founded in 1944 by Wilhelm Süss, Professor of Mathematics at the University of Freiburg on behalf of the Reichsforschungsrat (National Research Council). The location of the Institute at Oberwolfach was accidental. The estate known as "Lorenzenhof", situated on a slope above the village, was under the administration of Baden's Department of Education, along with a house dating from 1908 (demolished in 1972). This vacant building was offered to Süss. (For the early history of the Institute, see H. Gericke, "Das Mathematische Forschungsinstitut Oberwolfach", in: Perspectives in Mathematics: Anniversary of Oberwolfach 1984, Basel: Birkhäuser Verlag, 1984, p. 23 ff; I. Süss, "Origin of Mathematical Research Institute Oberwolfach at the Countryseat 'Lorenzenhof'" and "The Mathematical Research Institute Oberwolfach Through Critical Times" in: General Inequalities 2 and 3. Ed. by E. F. Beckenbach and W. Walter, Basel: Birkhäuser Verlag, 1980, p. 3 and 1983, p. 3).

In 1957 Süss himself provided a survey of the work of the Institute during the early years for the German Research Council (Deutsche Forschungsgemeinschaft) and the interested public:

"Already before the war in my capacity as chairman of the German Mathematical Association I had tried to win the support of government and other bodies for a central research institute of the kind that other fields of science had long possessed in the form of Max Planck Institutes. During the war the Institute was founded with the vigorous assistance of Professor Gerlach, then head of the physics division in the National Research council. The National Research Council provided a budget of more than 180 000 RM. The Institute was located in the Black Forest, where wartime disturbances could be expected to remain minimal. By the end of the war numerous German academic mathematicians had joined in intensive and successful research at the Institute. Dozens of publications including several monographs are proof of the work of those days.

At the end of the war the National Research Council ceased to exist. The State of South Baden provided 10 % of the budget previously promised to secure at least a marginal existence for the Institute. Leo Wohleb, then Premier and Minister of Education, worked on the assumption that later on the other German states would support the Institute with comparable amounts, thus bringing the total up to the former level. Unfortunately, so far such funding has not occurred.

With its budget reduced by 90 % the Institute had to re-orientate and reduce its activites drastically and at the same time take into account the needs of the postwar situation. Like German science in general, mathematics had fallen behind the level of international research in many fields. Already during the war foreigners had worked with the Institute and afterwards the Institute continually sought the assistance of foreign mathematicians to organize conferences on current mathematical topics of especial interest. Leading scholars from abroad were invited to provide us with first-hand information about advances in mathematics which previously had been unknown to us. The conferences were attended by the German specialists in the various fields of mathematics, in particular young mathematicians. Thus the Institute contributed greatly to the fact that after a few years mathematical research in Germany could keep pace with international standards in the discipline to some extent. The interaction with hundreds of foreign mathematicians influenced cultural and human relations in a most positive way. A large number of German mathematicians received invitations to give lectures and to do research abroad. Thus with the smallest financial effort the Institute achieved a record which has made its name known wherever mathematical research is performed.

The financial means did not allow the Institute to employ research staff or to give grants. Since 1945, all mathematical work at the Institute has been voluntary, and such work has not been credited as output of the Institute. Only the FIAT report [a report on the scientific and technological situation in Germany initiated by the American authorities at the end of the war], *the STUDIA MATHEMATICA (a series of monographs published by Vandenhoeck and Ruprecht), and two journals (ARCHIV DER MATHEMATIK, Birkhäuser Verlag, and MATHEMATISCHE-PHYSIKALISCHE SEMESTERBERICHTE, Vandenhoeck and Ruprecht) are published by the Institute or bear the name of its Director."*

In the files there is a list of those senior academics who were guests in Oberwolfach from 1944 to 1953.
(More junior mathematicians were not listed.)

"Ancochea (Madrid), Arbault (Poitiers), Aumann (München), Baier (Stuttgart), Barner (Freiburg), Behnke (Münster), Bernays (Zürich), Bilharz (Würzburg), Blaschke (Hamburg), Boerner (Gießen), Bol (Freiburg), Bompiani (Rom), Bouligand (Paris), Braconnier (Lyon), Braun (Hamburg), Brélot (Grenoble), ten Bruggencate (Göttingen), Bullig (Münster), Burau (Hamburg), Burckhardt (Zürich), Cartan (Paris), Chabauty (Grenoble), Charles (Saarbrücken), Collatz (Hamburg), Cremer (Aachen), Conforto (Rom), Deny (Straßburg), Dieudonné (Nancy), Eckmann (Zürich), Ehresmann (Straßburg), von Freytag-Löringhoff (Tübingen), Furch (Mainz), Gericke (Freiburg), Pereira Gomez (Paris), Görtler (Freiburg), Grunsky (Tübingen), Habicht (Heidelberg), Hadwiger (Bern), Hasenjäger (Münster), Hasse (Ahrensburg), Haupt (Erlangen), Heffter (Freiburg), J. E. Hofmann (Ichenhausen), Hopf (Zürich), Hönl (Freiburg), Hirsch (Newcastle), Jeger (Zürich), Jessen (Kopenhagen), Kaluza jr. (Braunschweig), Kamke (Tübingen), Kanold (Braunschweig), von Kaven (Detmold), Kloosterman (Leyden), Hans Kneser (Stuttgart), Hellmuth Kneser (Tübingen), M. Kneser (Heidelberg), Knopp (Tübingen), Koszul (Straßburg), Köthe (Heidelberg), Krull (Bonn), Künzi (Zürich), Lammel (Tutzing), Levi (Berlin), Lietzmann (Göttingen), Löbell (München), Locher-Ernst (Winterthur), Lorentz (Toronto), Lorenzen (Bonn), Lorrain (Straßburg), Lowell (London), Maak (Würzburg), Maaß (Heidelberg), Magnus (New York), W. Maier (Jena), Cl. Müller (Bonn), B. H. Neumann (Manchester), Nevanlinna (Zürich/Helsinki), Nöbeling (Erlangen), d'Orgeval (Algier), Ostmann (Berlin), Ostrowski (Basel), Pauc (Nantes), Peschl (Bonn), Petersson (Hamburg), Pfluger (Zürich), Pickert (Tübingen), Pisot (Bordeaux), Quade (Hannover), Reeb (Saverne), Reutter (Aachen), Revuz (Les Essart-Le-Roi), Richter (Haltingen), Roger (Bordeaux), Rohrbach (Mainz), Riss (Nancy), Röhrl (München), Rund (Freiburg), R. Sauer (München), A. Schmidt (Göttingen), R. Schmidt (München), Th. Schneider (Göttingen), Schubart (Karlsruhe), Schubert (Heidelberg), Scorza-Dragoni (Padua), Serre (Paris), Seifert (Heidelberg), Sommer (Münster), Specker (Zürich), Sperner (Bonn), Stein (Münster), Stellmacher (Göttingen), Stiefel (Zürich), Stöhr (Göttingen), Strubecker (Karlsruhe), Svenson (Heidelberg), Taussky-Todd (Washington), Todd (Washington), Tautz (Freiburg), Tietze (München), Tollmien (Göttingen), Ullrich (Gießen), Vietoris (Innsbruck), Vincensini (Marseille), Volk (Würzburg), van der Waerden (Zürich), Wever (Mainz), Hermann Weyl (Zürich), Wielandt (Tübingen), Weise (Kiel), Wittich (Karlsruhe), Zeller (Philadelphia)."

Pictures from the 1950s: the old "Lorenzenhof"; a view of its lounge; Wilhelm Süss and his wife

The Development of the Conferences since 1949

The conference activity of the Institute developed naturally as mathematicians working in the same field met in Oberwolfach and reported on their results. The first specifically organized conference took place in 1949. A note by Süss reads:

"Lectures held at the Mathematisches Forschungsinstitut in Oberwolfach

In addition to the continuos mathematical work the Institute has organized several larger conferences on special topics. During March and April 22 German and 11 foreign mathematicians met in Oberwolfach to discuss problems of current interest in topology and complex analysis. During August a series of 30 lectures brought together groups of younger German and French mathematicians and helped to establish both research and personal contacts among them; during the conference the aims and works of Bourbaki exerted a great influence.

A smaller group met in September with Professor Bernays (Zürich) and A. Schmidt (Göttingen) to discuss topics from logic."

The first geometry conference, in August 1951, was significantly labelled a "special meeting". Süss sent the following letter of invitation:

"Dear Colleague,

Our little research institute at the Lorenzenhof in Oberwolfach is planning a special geometry meeting from about August 5. My colleagues and I would be pleased if you could participate. May we ask whether we can count on your attendance? We would appreciate it if you could contribute a lecture or report, but such a contribution is not a condition for participation.
Hoping for an affirmative answer soon,

Yours sincerely,
W. Süss

Freiburg i. Br., June 25, 1981"

From this "special meeting" the series of annual geometry conferences and the conference programme in general evolved. It is obvious that geometry as Süss's own field was favoured by him.

Conference activity was stepped up after 1953 with the help of a grant from the Federal Chancellor's Office. This grant was given specifically for running conferences. The budget provided by the State of Baden-Württemberg was just sufficient to meet the running costs of the "Lorenzenhof" at Oberwolfach.

There is an apocryphal story that Süss in his hiking clothes approached Chancellor Adenauer during his summer vacation on the Bühler Höhe, but it appears to be a legend. It is true, however, that Süss met with Adenauer on October 30, 1954 at a meeting of the Federation of Industrial Chemistry in Baden-Baden.

The chart on p. 35 illustrates the subsequent development of the conferences. A similar updated list helps the Institute and the Mathematical Board in planning the annual conference programme.

In addition to purely mathematical fields other subjects were dealt with, such as "Topical questions in elementary particle theory" and "Mathematics – mediator between the sciences and the humanities". Various seminars and meetings for recipients of major fellowships and scholarships also took place, as well as some conferences on nonmathematical topics.

Since 1955 a training course for secondary-school teachers in mathematics has been run every year in conjunction with the Baden-Württemberg Department of Education. In 1959 H. Kneser described it in the following words:

"Aim: The mathematics teacher should make a lively and lasting connection with the scientific basis of one field important in school mathematics as well as with recent developments in that field.

Method: A few weeks in advance the participants will receive a short programme with reading list. Restrictions on the amount of subject matter and a limited number of participants. Intensive contribution from the participants; no lectures. The participants will prepare together a detailed set of notes which is then to be mimeographed and distributed to all participants. The seminar leaders will be available for discussions during the entire week."

From 1958 a special type of event evolved known as the "Kneser-Roquette Workshop" and later as the "Geyer-Harder Workshop".

The "workshops" try to further general mathematical education on a high level and to counteract the effects of the considerable specialization in mathematics. They have taken place twice a year, in April and October, since 1966. The topic and organizers are determined by the participants of the preceding meeting. The organizers then decide on and publish a programme based on selected literature. With the help of these references participants prepare for the next meeting. In general there are fifteen one-to-two-hour lectures.

A certain diversification of mathematical subjects is intended. The topics of the most recent workshops are: p-adische Uniformisierung (April 1982), das Eisenstein-Ideal (October 1982), das Modul-Schema der stabilen Kurven M_g (April 1983), Schnitthomologie (October 1983), transzendente Zahlen (April 1984) and 4-dimensionale Mannigfaltigkeiten (October 1984).

It is not possible to go into a detailed account of the conference subjects but we can indicate some trends.

The Institute pays special attention to lines of research which are not well represented in West Germany and to those undergoing rapid development. Thus statistics and probability were promoted strongly already in the 1960s, in part with support from the German Research Council. Similarly both the applications of mathematics in operations research and mathematics education have been supported since the late 1960s. Originally both fields also obtained subsidies from the Volkswagen foundation.

Every opportunity is taken to establish contacts between mathematicians and those who use mathematics. The mathematical methods in medicine and biology can be named as well as connections to physicists, chemists, and engineers.

After the opening of the guesthouse in 1967 it was possible to expand the conference programme over the whole year. From the beginning of the 1970s regional events had to be reduced in favour of international symposia and since the mid-seventies the tight conference schedule often required difficult decisions.

		67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
Geschichte der Mathematik	Hofmann					●	●	●	●		●	●		●	●			
Problemgeschichte der Mathematik	Hofmann	●	●	●	●													
Mathematische Logik u. Grundlagenfor.	Hermes, H. A. Schmidt	●		●	●													
Quantenlogik	Hermes, v. Weizäcker							●										
Boolesche Algebren und Maßtheorie	Dwinger, Pauc							●										
Unerreichbare Kardinalzahlen	Müller	●																
Graphentheorie	Ringel, Wagner	●																
Kombinatorik	Morgenstern, Jacobs	●																
Geordnete Mengen										●								
	Lesieur							●										
Universelle Algebra	J. Schmidt		●															
Zahlentheorie	Schneider, Rohrbach								●			●		●				
	Schneider, Klingen					●												
	Schneider, Hoheisel			●														
Zahlenth. u. Modulfunktionen																●		
Algebr. Zahlentheorie	Hasse, Roquette	●			●			●										
Jordan-Algebren u. nichtass. Algebren	Jacobson, Koecher, Paige	●																
Ringtheorie	Baer							●				●						
Homologische Algebra	Baer, MacLane								●									
Ringe, Moduln und hom. Meth.	Baer, Kasch		●															
Kategorien und Funktoren	Dold, MacLane		●															
Gruppentheorie/Algebra																	●	●
Gruppentheorie	Baer														●			
	Wielandt													●				
	Baer, Gaschütz												●					
	Baer, Wielandt						●	●	●	●								
Endliche Strukturen	Baer					●												
Endliche Gruppen und Liesche Ringe	Wielandt, Zassenhaus			●														
Gruppen und Geometrien	Baer, Tits		●	●							●							
	Baer	●			●													
Abelsche Gruppen	Fuchs, Levi							●										
Lin. Gleichungen und Ungleichungen																●		
Ergodentheorie														●				
	Jacobs			●														
Reele Funktionen																●		
	Nöbeling												●					
Funktionentheorie																		●
Funktionentheorie einer Veränderlichen	Grunsky, Wittich					●												
Funktionenth. mehr. Veränderlicher	Behnke, Sommer												●					
	Behnke, Stein											●						
Komplexe Anlalysis											●					●		
	Grauert, Remmert, Stein		●			●												
Spezielle Funktionen	Meixner, Schäfke									●								
Limitierungstheorie	Knopp, Lösch													●				
Partielle Differentialgleichungen										●								
	Haack, Hellwig	●		●		●		●										
Funktionalgleichungen	Aczel, Haupt, Ostrowski		●	●		●	●											

		67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
Approximationstheorie	Butzer					●												
Fastperiod. Funktionen	Maak					●												
Harm. Analyse u. Integraltransform.	Butzer			●														
Funktionalanalysis	Köthe						●				●		●					
	König, Köthe, Tillmann		●															
Geometrie												●	●	●	●	●	●	●
	Weise			●	●	●	●	●	●	●	●							
	Leichtweiß, Weise	●	●															
Grundlagen der Geometrie																	●	
	Baer, Sperner											●						
	Sperner								●									
	Bachmann, Sperner							●										
	Bachmann, Baer, Sperner					●	●											
	Bachmann, Sperner, Springer			●	●													
	Bachmann, Freudenthal, Sperner	●	●															
Diskrete Geometrie	Fejes-Tóth						●											
Konvexe Körper u. konv. Funktionen	Ewald, Busemann				●													
Konvexe Körper, geom. Ordnungen	Derry, Ewald, Haupt	●																
Moderne Differentialgeometrie	Gericke, Kneser													●				
Differentialgeom. i. Großen	Barner, Chern, Klingenberg				●													
Topologie	Eckmann												●					
	Dold, Puppe, Schubert	●		●	●	●												
	Schubert		●															
Anal. Probl. of Branching Process Th.	Dinges, Kendall	●																
Math. Statistik	Richter												●					
	Schmetterer										●							
	H. Kneser, Witting									●								
Math. Statistik u. W-Theorie	Krickeberg								●									
	Jacobs							●										
	H. Bauer					●												
	Pfanzagl				●													
	Morgenstern		●															
	Witting	◐																
Funktionalanal. Meth. i. d. num. Math.	Collatz, Unger	●		●	●													
Num. Meth. i. d. Approximationstheorie	Collatz, Meinardus		◐	●														
Num. Behandlung v. Differentialgl.	Collatz, Unger		●															
Optimierungsfragen	Collatz, Wetterling	◐																
Num. Bhdlg. v. Probl. d. lin. Algebra	F. L. Bauer, Ostrowski				●													
System- u. Inform. th. u. d. Anwendung i. d. Bio.	Hassenstein, Reichardt										●							
Math. Meth. d. Himmelsmech. u. Astron.	Stiefel		◐		◐													
Satelliten- u. Raumflugtheorie	Magnus, Sagirow			●														
Probleme d. nichtlinearen Mechanik	Görtler, Magnus										●							
Th. d. Spiele u. benach. Geb. d. Stat.	Kneser													◐				
Theoretische Physik		◐	◐						●	●●	●◐	●●◐	●	●	●			
Gruppen u. Elementarteilchen	Beckmann, Tillmann				◐													
Math. Ausbildung d. zuk. Studienräte	Behnke, Fladt								●									
Math. Ausbildung d. Volks- u. Realschullehrer			◐															

List of conferences 1951–1967

		67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
Gespräche zw. Schule und Hochschule	Barner, Fladt				●													
L'Enseignement de la Math.	Denk, Papy				●													
Didaktik	Barner, Fladt	●	●	●	●	●	●											
Fortbildungslehrgang f. Studienräte	Kneser, Süss													●	●			
	Haupt, Kneser												●					
	Kneser, Schulz											●						
	Hadwiger, Kneser										●							
	Kneser, Maak									●								
	Kneser, Schubert								●									
	Kneser, Pickert			●				●										
	Gericke, Stuloff						●											
	Kneser, Vogel				●													
	Kneser	●																
Seminare und Arbeitsgemeinschaften																		
Anwendungen d. Funktionstherorie	Ullrich													●				
Mathematische Physik														●				
Seminar	Süss												●					
Stellenringe	AG										●							
Algebraische Gruppen	M. Kneser, Roquette										●							
Cohomologieoperatoren	Dold, Puppe									●●								
Harmonische Analyse	Leptin (AG)								●									
	Leptin, Reiter								●									
AG üb. top. Meth. i. d. Alg. Zahlenth.	M. Kneser							●●										
Arbeitssem. üb. projektive Diff.geom.	Barner, Bol							●										
Seminar üb. angewandte Mengenlehre	Felscher		●				●											
Arbeitstagung (Frankfurter Seminar)	Baer	●●	●●	●●	●●	●●	●●											
AG üb. part. Differentialoperatoren	König, Tillmann						●											
	König					●												
AG über endl. Geometrie	Dembowski						●											
AG üb. stochastische Prozesse	Krickeberg				●													
Arbeitstagung d. Fachseminars FR	Raith	●	●			●												
	Prade, Raith				●													
AG Klassenkörpertheorie	Roquette				●													
Arbeitstagung üb. Analysis	Butzer				●													
Arbeitstagung üb. Funktionalanalysis	König, Schäfke			●														
AS üb. Grenzfr. zw. Diff.geom. u. Var.	Barthel			●														
AG	Puppe			●														
Arbeitssem. üb. d. Sätze v. Cohen	Müller			●														
AG üb. Darstellungstheorie	Gaschütz, Jehne			●														
Heidelberg-Straßburger Seminar	Dold, Gabriel	●●	●●●	●														
Globale analytische Geometrie	M. Kneser		●															
AG über lokale analytische Geometrie	Remmert		●															
AG über Funktionanalysis	König		●															
Auflösbare Gruppen	Huppert	●																
Spezielle Probleme der Analysis	Meyer, Schäfke	●																
Bordismentheorie	Bröcker, tom Dieck	●																
Seminar Roquette		●																

The Founding of an Association

In May 1958 after several months of severe illness Wilhelm Süss died. At first glance it would appear that the illness and death of the founder and Director of the Institute had stimulated the formation of the Gesellschaft für mathematische Forschung (Society for Mathematical Research). As it so happens, however, in 1957–58 important new developments were taken place. And if Süss had stayed well, he would have taken hold of them with great speed and vigour, the more so as he had been elected to the influential post of Rector of the University of Freiburg.

The Audit Office of Baden-Württemberg wrote on December 17, 1957:

"In the absence of any legal structure or body Professor Süss as Honorary Head of the Institute is the only person entitled or obliged to represent the Institute and is personally liable for it. This is considered to be a highly undesirable situation – not least by Professor Süss himself. Until now he believed that he was acting on behalf of the Department of Education. After consultations with the Audit Office he is interested in rapid change in this situation."

The Audit Office suggested that the Institute be incorporated into the University of Freiburg or affiliated with it.

Süss sought repeatedly to make contact with the federal authorities; then on March 27, 1958 the Federal Minister of the Interior wrote him a personal letter:

"For a considerable time we have been discussing whether there is any possibility of granting greater support to the Mathematisches Forschungsinstitut."

The minister asked for information about the origin of the Institute, its legal status and structure, and the extent of its activities.

When Süss fell ill in late February 1958 – he died on May 21 – Hellmuth Kneser of Tübingen, his friend of many years and deputy at Oberwolfach, had to take charge of the developments. Rector Tellenbach and the Senate of the University of Freiburg confirmed Kneser as the Head of the Institute; at the direction of the Department of Education the University administration incorporated the budget of the Mathematisches Forschungsinstitut into the University budget for the fiscal year 1958–59.

Soon after Süss's death Kneser contacted mathematicians and friends of Oberwolfach, initially to gain support to maintain Oberwolfach's independent character after an eventual affiliation with the University of Freiburg. Thus the nucleus of the later Mathematical Board was created.

As well Kneser had to clarify the legal status of the Institute. Although Süss had in fact in 1944 been commissioned by the National Research Council to lay the foundations of a National Research Institute, it turned out, however, that such an Institute had never been legally founded. Therefore the Federal Government was not legally responsible for Oberwolfach.

Although Kneser tried to establish contact with the Federal Department of the Interior, it was Friedrich Hirzebruch of Bonn who recognized the possibilities during negotiations with Departmental Officials and immediately seized upon them. Hirzebruch wrote to Kneser on July 19, 1958:

"There is a good chance that the Federal Department of the Interior will develop Oberwolfach into a small-scale Institute of Advanced Study. It would just be necessary to produce a concrete proposal very quickly . . ."

During the summer of 1958 and the following winter there were numerous discussions among the interested parties: mathematicians, the Federal Department of the Interior, and the Baden-Württemberg Department of Education. The government representatives in particular urged that the legal situation be clarified:

"Several parties consider the establishment of a solid legal basis a necessary condition for financial support for the Mathematisches Forschungsinstitut. [Dr. Hilde] Hoffmann, [representing the Baden-Württemberg Department of Education,] *mentiones that the State Department of Finance has rejected the proposed affiliation with the University of Freiburg. Of the several possibilities, that of forming a registered association is most strongly recommended . . ."*
(From a meeting on March 9, 1959 in Oberwolfach)

These recommendations led to the inaugural meeting of the Society for Mathematical Research, which has been described above.

The Transitional Period after 1959

The Society for Mathematical Research was founded not only to preserve Oberwolfach but also to establish a mathematical research institute with a permanent staff. The possibility of a Max Planck Institute was considered again and again. At the very beginning of Süss's contacts with the Office of the Federal Chancellor (July 1954), he wrote to the Office's Assistant Director, Dr. Wilhelm Grau:

"In the application itself I have made no mention of the long-term goal of putting the Institute in the hands of the Max Planck Society because I cannot judge whether this dream may as yet be mentioned publicly . . ."

As mathematicians were aware that mathematics did not really fit into the pattern of the Max Planck Institutes, they could not come to decision to formally contact the Max Planck Society. Eventually the grant-giving bodies established such contacts, and in January 1960 a commission of six representatives each from the Max Planck Society and the Mathematical Board discussed the problems. The tasks and aims of the Institute were set out in a memorandum on which the Max Planck Society conferred and took expert advice. As a result in a report of December 5, 1960 the Max Planck Society recognized the urgent need to promote mathematics but concluded that the foundation of a research institute in the style of a Max Planck Institute was not an appropriate solution. The result of the discussions within the Max Planck Society was also laid down in a memorandum.

Thus the plans to found a Max Planck Institute of mathematics failed for the time being. Twenty years later, however, such an institute was founded in Bonn under the direction of Hirzebruch.

The discussions and the memorandum of the Max Planck Society made it obvious to organizations and individuals responsible for sponsoring science that something had to be undertaken to promote mathematics and that a financial basis for the Mathematisches Forschungsinstitut Oberwolfach needed to be created. Through the assistance of Adolf Butenandt, President of the Max Planck Society, bridging grants totalling DM 285 000 were obtained from the Fritz-Thyssen-Foundation between 1961 and 1964. This amount enabled the Institute to intensify its work and increase the number of conferences (cf. list on p. 35 ff and diagram on p. 15). For the time being the financial difficulties were removed but concern about the future of the Institute continued.

Naturally the Mathematical Board of the Society for Mathematical Research discussed thoroughly the decision of the Max Planck Society and came to the following conclusion in a meeting on April 29, 1961:
"The support and consolidation of the Institute at Oberwolfach is our most pressing aim. The plan to set up a new research institute should be postponed but not altogether abandoned."

On March 2, 1962 Schneider reported to the Mathematical Board
"on steps taken by him with a view to putting the Institute in the hands of the Federal Government or the State of Baden-Württemberg. Herr KAMMERER from the State government and Dr. PETERSEN from the Federal Government – both members of the Administrative Board – have stated that the question should be deferred until the Federal Scientific Council had stated its position."

Already in 1958 the Wissenschaftsrat (Science Council) had been asked to deal with the Mathematisches Forschungsinstitut Oberwolfach but it was unable to submit its recommendations for such independent institutes until April 1965.

The Initiative of the Volkswagen Foundation

The first reference to the Volkswagen Foundation can be found in the minutes of the meeting of the Mathematical Board of March 2, 1962:

"In this connection, Herr Weise suggested that we approach the newly created Volkswagen Foundation."

This meeting took place immediately after the Foundation's board of trustees had constituted itself (February 27, 1962). One of the trustees, Professor Carl Wurster, also a member of the Federal Scientific Council and of the Senate of the Max Planck Society recommended as early as April 1962 that the Foundation support the Mathematisches Forschungsinstitut Oberwolfach. Contacts between Karl Heinrich Weise and Theodor Schneider for the Institute, and Gotthard Gambke, Secretary-General of the Foundation, followed. At its meeting on October 26, 1962 the Mathematical Board once again thoroughly discussed the future of the Institute, especially the question of its location.

In these years the location was discussed over and over again. Was it wise to keep a mathematical research institute in such an isolated and out-of-the-way place? Possible buildings in the vicinity of Freiburg were looked for in the hope of finding one in a better state of repair than the old house at Oberwolfach. Thus the meeting of the Mathematical Board on October 26, 1962 was of decisive importance for the Mathematisches Forschungsinstitut Oberwolfach. It decided:

"that an application should be made to the Volkswagen Foundation for means to construct a guesthouse and expand the MFI at its present site. The Director is charged to take the appropriate steps."

The application to the Volkswagen Foundation of March 4, 1963 contains an analysis of the necessary space, an estimate of the building costs, a detailed description of the objectives of the Institute, and budget and staff plans for the years 1963 to 1966.

The idea was to indicate clearly what means would be needed in the following years in order to carry out the Institute's objectives. The reproduction of these plans on page 42 shows both the amounts budgetted (estimated) and the amounts actually spent (actual). The lower section of the plan shows which institutions provided the money.

Already on April 23, 1963 Gotthard Gambke, Secretary General of the Volkswagen Foundation, wrote back to the Mathematisches Forschungsinstitut Oberwolfach:

"I am pleased to be able to inform you that in pursuance of your application of March 4, 1963, the Trustees of the Volkswagen Foundation have voted funds up to DM 1 477 000 on condition that the entire running costs of the guesthouse shall be guaranteed by a third party. Will you please inform me in which manner this condition will be fulfilled."

The Administrative Council met for an "extraordinary working session" on June 22, 1963. The subject of this meeting was a written guarantee to be given by the Federal Government and the State to meet the running costs of the new guesthouse.

The meeting certainly was the most exciting in the history of the Society. The minutes report this in a somewhat more sober fashion:

"Herr KRETZ [of the Baden-Württemberg Department of Education] *was concerned about possible difficulties with the State Department of Finance and with the relevant committee in the legislature. Accordingly he wished to wait until the exact text of the letter from the Science Council [Wissenschaftsrat] to the Education Minister would be available. The letter should anticipate the final decision of the Science Council and furnish the basis for the desired guarantee from the Federal Government and the State.*

Herr BARNER left the meeting for a short time in order to determine the text of the letter, which had already been drawn up but not yet reached the Education Department. The letter emphasized in general terms that the Mathematisches Forschungsinstitut deserved financial support and suggested to the State of Baden-Württemberg that it cover the running costs of the Institute or strive to get it included in the Königstein agreement [dealing with scientific institutions financed jointly by the Federal Republic and the states] . . .

In connection with the written guarantee the Board members could not agree whether the Volkswagen Foundation would be satisfied with a limited guarantee or whether already at this stage the Federal Government and the State should be informed of the final size of the annual budget, about DM 330 000. Herr PETERSEN recommended the latter and he suggested that in the autumn after this matter had been cleared up, a meeting of the

Cost schedule Expansion plan Mathematisches Forschungsinstitut Oberwolfach, 1963	1963		1964		1965		1966	
	estimated	actual	estimated	actual	estimated	actual	estimated	actual
Expenses (in DM 1000)								
salaries	69.1	62.9	95.4	92	111.4	92.7	155.8	114.5
building maintenance	26	16.1	32	3.3	32	5.6	35	1.1
library	15	19.8	20	35.3	20	38	20	47.6
operating costs (rent, electricity, heating, etc.)	15.4	14.9	18	16	18	14.1	30	23.2
miscellaneous expences (postage)	13	12.2	15	12.8	18	12.5	20	14.7
conference grants	30	40.6	32	54.2	35	67.6	50	61.8
non-recurring expenditure (furniture)	12	10.7	20	6.1	20	3	20	24.7
	180.5	177.2	232.4	219.7	254.4	233.5	330.8	287.6
Income								
Federal subsidies		50		73.1		100		140
State subsidies		56.9		86.2		129		144.6
Thyssen-Foundation		68		60		–		–
other income		2.3		0.4		4.5		3.0
		177.2		219.7		233.5		287.6

Administrative Council should be held, to which representatives of the Finance departments should be invited."

When the relevant recommendations of the Science Council were published in April 1965, the statements concerning Oberwolfach gave the Institute unanimous support:

"Setting up a research centre independent of the universities but with long-term research programmes would meet with severe difficulties because of the great demand for young academics. Nevertheless in the long run such a central mathematical institute should be planned. At present the only establishment pursuing general mathematical research outside the universities is the Mathematisches Forschungsinstitut Oberwolfach (No. 171). As mathematical research must be increased this institution, unique in the Federal Republic, should be preserved and supported as a matter of financial urgency. It is recommended that the Institute should continue its work within its present context and not be affiliated with a university. The Institute's chief task is the cultivation of special fields of pure and applied mathematics and their neighbouring fields on an international basis; its secluded site is especially helpful in furthering research collaboration. The Institute is highly regarded abroad and has served as a model for similar institutions.

We support the recommendations to extend the guesthouse, necessary for the continuation of the Institute's work as well as the planned smaller alterations of the building. As at present the Director should be a university professor, assisted efficiently by a mathematical advisory board. Another mathematician should be hired as a full-time organizer, supported by several academically qualified staff (to take care of the library and edit the reports of the research results) as well as the necessary administrative and maintenance staff.

Financing of the Mathematisches Forschungsinstitut Oberwolfach (in DM 1000)	1986 estimated	1985 estimated	1984 estimated	1983 actual	1982 actual	1981 actual	1980 actual	1979 actual	1978 actual	1977 actual
income										
state subsidies	1.778.8	1.764.1	1.424.1	1.581.1	1.424.1	1.393.9	1.341.0	1.287.0	1.155.3	1.100.3
other income	–	–	–	0.4	0.5	0.4	–	–	0.6	–
amount carr. ov. from preced. year	–	–	15.3	–	–	30.1	–	–	–	
total	1.778.8	1.764.1	1.439.4	1.581.5	1.424.6	1.424.4	1.341.0	1.287.0	1.155.9	1.100.3
Expenses										
salaries	852.4	830.2	772.2	728.7	698.7	694.0	653.1	621.9	524.8	488.6
conferences	405.0	390.0	375.0	288.3	294.1	320.4	304.3	288.1	258.5	247.8
travelling expenses	16.5	15.5	12.5	14.3	11.7	9.2	10.4	15.6	12.3	11.5
office supplies	51.0	49.0	46.5	30.0	35.9	37.4	39.2	43.1	29.5	32.7
library	165.0	160.0	150.0	174.7	125.4	124.5	118.2	111.0	111.4	84.2
postage and telephone charges	33.0	31.5	30.0	24.9	23.5	19.2	20.9	21.2	21.0	18.8
buildings maintenance	40.0	38.0	37.0	112.5	46.6	35.3	14.3	13.2	19.7	21.9
operating costs	165.0	160.0	155.0	153.7	106.3	127.2	117.3	133.2	72.0	82.4
rent	8.7	8.7	8.7	8.6	8.7	7.0	7.0	6.9	6.8	6.7
appliances and furnishings	26.5	25.5	25.0	24.3	27.3	38.6	14.9	18.5	23.3	23.7
services by third parties	15.0	15.0	12.5	5.7	9.1	11.2	10.5	13.4	14.0	–
miscellaneous expenditure	0.7	0.7	0.6	0.5	0.6	0.4	0.8	0.9	0.4	1.1
investments	–	40.0	–	–	36.7	–	–	–	9.1	–
total	1.778.8	1.764.1	1.625.0	1.566.2	1.424.6	1.424.4	1.310.9	1.287.0	1.102.8	1.019.4

A long-term solution to the Institute's financial needs must be found. As the Institue's work is of an international character, it seems necessary that the Federal Government should continue to share the financial burden. In addition the sufficient means should be found to enable mathematicians in special fields to stay to pursue research for extended periods."
(Empfehlungen des Wissenschaftsrates zum Ausbau der wissenschaftlichen Einrichtungen, Teil III, Forschungseinrichtungen außerhalb der Hochschulen, Akademien der Wissenschaften, Museen und wissenschaftlichen Sammlungen, April 1965, pp. 155-156).

On January 7, 1963 the Institute was informed by telephone from Stuttgart that the state legislature had agreed for its part to the written financial guarantee for Oberwolfach and that it had budgetted the sum of DM 86 200 for 1964 – exactly the amount requested from the state in Oberwolfach's preliminary budget.

The Federal Government has repeatedly expressed its support and has always treated the Mathematisches Forschungsinstitut Oberwolfach very favourably. Although it never gave a formal financial guarantee, it bore half the costs of the Institute until 1976. The planned budget of DM 330 000 was not yet reached in 1966, but the budget of 1967 exceeded this amount slightly. For the financial backers this meant a considerable effort; for the Institute it provided a modest foundation on which to develop its activities once the new building has been finished.

The table on p. 43 traces the financial developments from 1977 to the budget estimates for 1985–86.

The Volkswagen Foundation has put at the disposal of the Institute a total of about DM 6.5 million since it first agreed to help in 1963. Initially only guest rooms and studies were intended, and it was expected that the Mathematisches

Forschungsinstitut Oberwolfach would lease the property, including the old house, and erect the new buldings. During the planning and construction a series of difficulties arose partly because of the planning requirements and since the site was located on an exposed slope outside designated building areas and was approached over a bridge of inadequate size. These problems pushed up the costs, and finally in 1967 the Volkswagen Foundation bought the whole property and put it at the disposal of the Mathematisches Forschungsinstitut through a special contract (1967 and 1981). On October 16, 1967 the new buildings were opened. Four years had passed since the first grants had been promised. (Two of these years had been needed for the planning alone.) In an open architectural competition the firm of Schelkes and Wartner (Freiburg) produced the design which envisaged the guesthouse as a series of terraces growing out from the slope. (For detailed description see pp. 12).

The old house still stood and despite some discomforts retained the fond esteem of the visitors: however, in the course of the years the space it offered proved insufficient. To extend or rebuild the house was impossible, and as its structure deteriorated seriously there was no choice but to pull it down and replace it by a new building with a library, lecture halls, and discussion rooms.

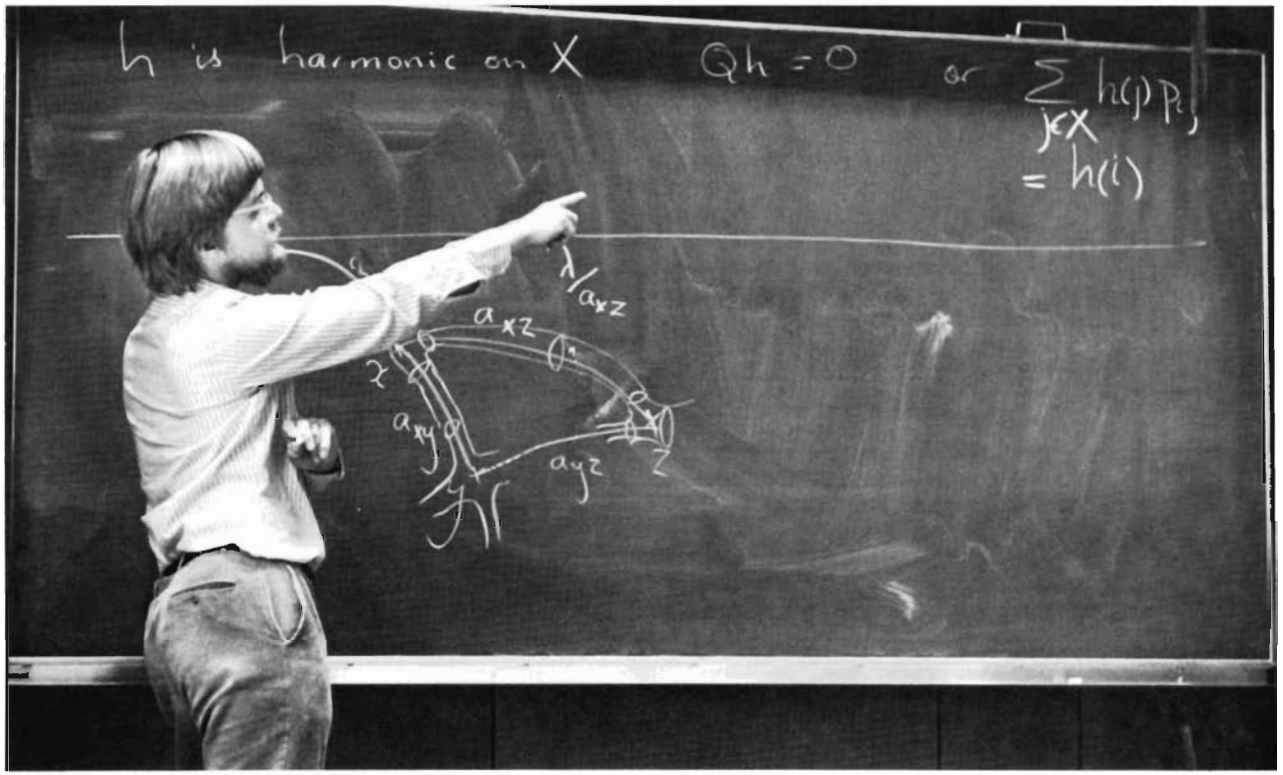
In the summer of 1969 an application was sent to the Volkswagen Foundation for such a building.

The architects Roßmann and Partners of Karlsruhe, in cooperation with the Foundation and the Institute worked out a sound and functional design. The Institute continued its work during the two years of contruction and in 1974 the new building was ready for occupation.

It is not by chance that the building strictly follows the pattern of its steel frame. When Erich Roßmann handed over the house on June 13, 1975 he explained the plan:

"Should we have built a romantic castle in isolation as a meeting house for mathematicians, for those who have contributed the visible shapes of this technological age?

We were convinced that precisely in this place we could not dispense with the visible order of geometric pattern. We saw as our task the creation from serial elements of an integrated but at the same time multifaceted building.



Two points appeared particularly important:

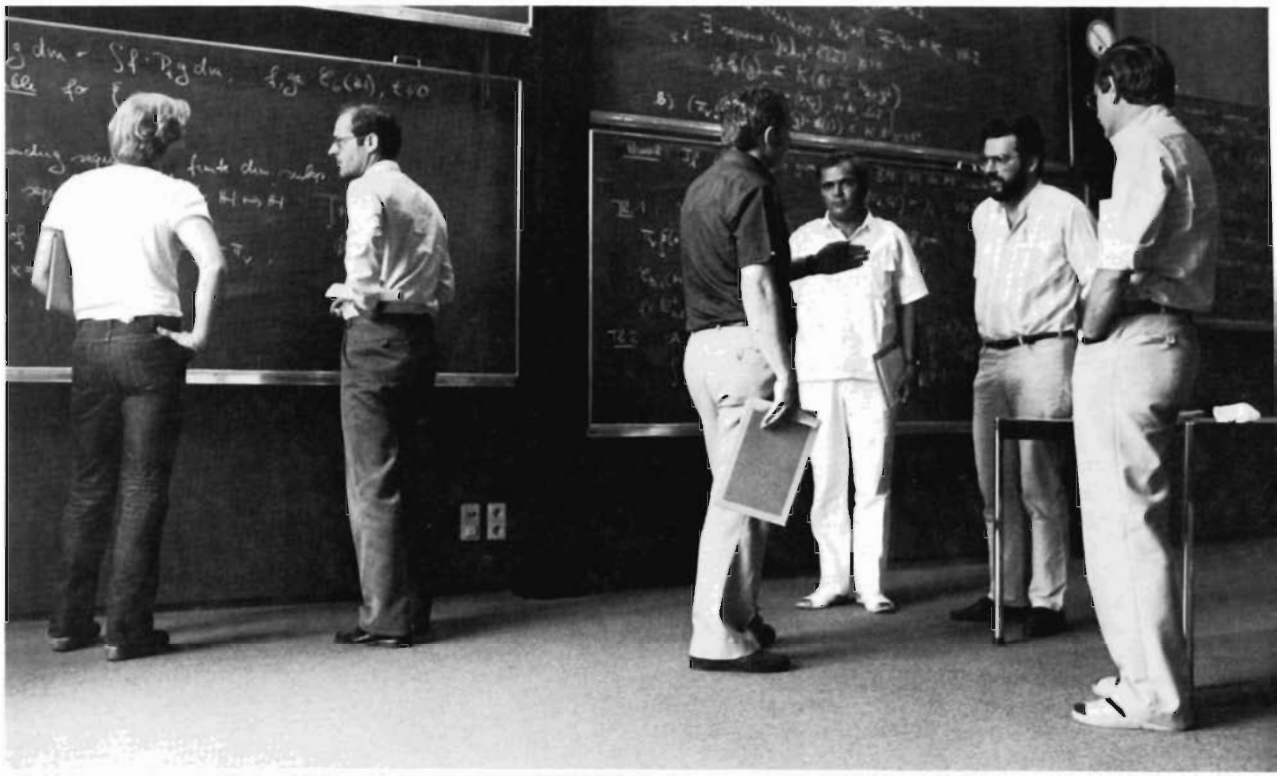
1. The building should be in harmony with its location, with the surrounding landscape. Its broken outline follows the contour of the slope and respects the pattern of the terrace of the old house. The building is subordinated to the neighbouring guesthouse in such a way that the view from the guest rooms has improved. The galleries are a concession to the local climate: like the protruding roof of the traditional Black Forest farmhouse, they protect the timber construction against the elements.

2. We tried to arrange the space in such a way as to create a tension between the public and private spheres. Wherever we live we need such a tension.

For that reason we have built this house around an open lobby or lounge rising through both of its storeys, which are connected by a wide staircase. We had in mind the "staircase-pictures" by Oskar Schlemmer, which present so effectively both encounters and groups in space. This large two-storeyed room extends outwards and grants space to the person who enters, thus allowing him to prepare for meeting others. This lobby leads into the semipublic areas of the lecture hall and the various discussion rooms.

The private area is formed by the library which is divided by the shelves into small working areas with different sizes, views, and furniture, and to which guests may retire to read and work.

Despite the variety among the rooms and the construction's interrupted external form, the building retains a great unity thanks to the small number of dominant building materials used. For this reason we have furnished the rooms in different ways, at the same time selecting furniture with matching colours."



With the help of the new building the conference programme was able to fully expand and has more than doubled since the 1960s.

SUMMARY AND OUTLOOK

We have tried to show how the Mathematisches Forschungsinstitut Oberwolfach and its activities grew naturally until the Institute became a home for mathematics, valued by mathematicians throughout the world.

During its first years – the last winter of the war and the time immediately following – Oberwolfach served as a refuge and even an asylum for homeless mathematicians. Already at this time a community of mathematicians formed which learned to appreciate the advantage of working together in close proximity to one another. This established that spirit of Oberwolfach which has persisted to the present day.

The ties with the outside mathematical world had been severed for a considerable time and had to be re-established and strengthened.

The first visits from the neighbouring countries, Switzerland and France, were seen as great events, and Oberwolfach did much to reconnect German mathematics to mathematics in the wider world.

This development continued in the 1950s: one could easily withdraw to Oberwolfach to pursue research and exchange ideas with colleagues working in closely related fields. To keep pace with the rapid progress in mathematics it was not sufficient to meet in small circles. An exchange with as many colleagues as possible from one's own field was desirable. Thus conferences were organized, ranging from seminars with mathematical colleagues and students to workshops with narrowly defined topics and international symposia.

During the 1960s Oberwolfach conferences in many mathematical fields were already a fixed institution. Mathematicians in the same field came to know each other's interests and abilities.

This may have helped to provide better information in filling the academic vacancies during the years of university expansion. In addition the Institute gave organizational assistance to strengthen contacts among mathematicians.

As Oberwolfach's buildings and programme expanded, the international contacts multiplied and were strengthened until all conferences assumed an international character. Today there are visitors from all countries in which mathematical research is pursued.

Today our main concern about the future of research is directed towards young mathematicians, since under the present unfavourable economic conditions too few see any sense in making the first attempts at research. The question arises as to what assistance Oberwolfach can give.

For mathematicians Oberwolfach appears as a "gateway to the world". Oberwolfach can show young mathematicians that research is not a national affair and that their chances are not restricted to one country. On the other hand, as in its early days, Oberwolfach could develop into a refuge for undisturbed research under good conditions.

At Oberwolfach many a young mathematician has received stimuli which have deeply influenced not only his work but also his entire live as a researcher. We hope that this will continue.

The Mathematisches Forschungsinstitut Oberwolfach does not need to search for fresh tasks. Nevertheless, we hope to be able to offer a greater number of researchers the opportunity to come for extended visits to work alone or with others. In particular we want to challenge and encourage younger mathematicians.

Mathematisches Forschungsinstiut Oberwolfach
(Mathematical Research Institute Oberwolfach)

Office: Albertstr. 24, D-7800 Freiburg
Telephone: (0)761/278020, (0)761/278029

Meeting place: Lorenzenhof, D-7620 Oberwolfach-Walke
Telephone: (0)7834/311, (0)7834/512

Gesellschaft für mathematische Forschung e.V.
Albertstr. 24, D-7800 Freiburg

Stiftung Volkswagenwerk
zur Förderung von Wissenschaft und Technik in Forschung und Lehre
(Volkswagenwerk Foundation to promote science and technology in research and university teaching)
Office: Kastanienallee 35
P. O. B. 810509
D-3000 Hannover 81
Telephone: (0)511/8381-0

©Gesellschaft für mathematische Forschung e.V.
and Mathematisches Forschungsinstitut Oberwolfach, October 1985

Edited by Martin Barner, Barbara Windscheid, Mathematisches Forschungsinstitut Oberwolfach; Sabine Jeratsch, Stiftung Volkswagenwerk, Hannover

Layout and design by Professor Rolf Lederbogen, Karlsruhe

Photographs: Gerd Fischer, Düsseldorf pp. 2, 10 top, 11, 13 top, 33, 44; Klaus Kinold, München pp. 12 bottom, 13 bottom, 45, front cover flap; Bruno Krupp, Freiburg p. 12 bottom; Klaus Siebahn, Bonn pp. 4, 6, 8, 26, 30, 46, 47; Wilhelm Boehm, p. 24 top right, from: Forscher und Gelehrte, Ed. by Wilhelm Boehm in cooperation with Gerda Paehlke, München, Battenberg, 1966); Ferd. Dümmlers Verlag, Bonn, p. 24 bottom 1.

Offset Lithography by Riegger Reprotechnik, Karlsruhe

Printed by Engelhardt & Bauer, Karlsruhe

Cover after a formula in the typical handwriting of Hadwiger (Lecture from 2. 7. 1947, Lecture book 1, page 46)

CONTENTS

Prefaces

Lothar Späth, Premier Minister
of the State of Baden-Württemberg 3
Rolf Möller, Secretary General
of the Volkswagen Foundation 5
Karl Peter Grotemeyer, Chairmann
of the Mathematical Board 7

Foreword

Martin Barner, Director
of the Mathematisches Forschungsinstitut Oberwolfach 9

The Mathematisches Forschungsinstitut Oberwolfach 10

Organization 10
Finances 11
The Buildings of the Institute 12
The Work of the Institute 13
Planning the Conference Programme 14
Preparation and Progress of a Conference 18

The Gesellschaft für mathematische Forschung 23

The Foundation of the Society (1959); 23
Statutes of the Society 27
Members and Committees 29

History of the Mathematisches Forschungsinstitut Oberwolfach 31

The Early Years (1944–1958) 31
The Development of the Conferences since 1949 32
The Founding of an Association 39
The Transitional Period after 1959 40
The Initiative of the Volkswagen Foundation 41

Summary and Outloock 48