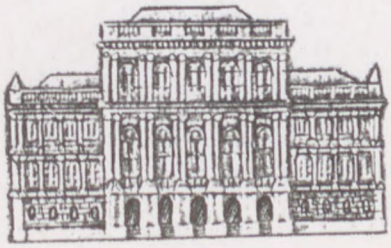
THE HUNGARIAN ACADEMY OF SCIENCES

Information on its organization, role, and research network



Budapest
1988

HUNGARIAN ACADEMY OF SCIENCES
Institute for Research Organization

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CHAPTER I.

GENERAL INFORMATION ON THE HUNGARIAN ACADEMY OF SCIENCES

1. The legal status and main responsibilities of the Academy*

The Hungarian Academy of Sciences (henceforward Academy) is the supreme scientific body of the Hungarian People's Republic. It cultivates all branches of science and scholarship through the activities of its members and research institutes; performs the function of guiding - at the national level - basic research in natural science, as well as those fields of social science research that are included in the state development plans (henceforward: social science research for short). Taking part also in the guidance and coordination of the country's entire research and development endeavour, the Academy helps in elaborating and supervising national research plans and programs. The Academy is responsible for the research carried out in institutes under its direct leadership; promotes the coordination of research throughout the country; follows with attention and evaluates the progress being made in the sciences, with special regard to those fields that lay the foundations for future research efforts; works out forecasts, guidelines, and makes recommendations as to how the country's scientific work can be best promoted.

The supervision over the Academy's activities is excercised by the Council of Ministers. Furthermore, the Council of Ministers in its supervisory capacity specifies the tasks incumbent on the Academy as coordinator of the country's research effort, and approves the Academy's statutes passed by the General Assembly.

The financial means necessary to the Academy's operation are included as separate heading in the state budget.

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* To the better understanding of what follows in this volume it should be noted beforehand that the Academy has a double function, it acts as a corporate body or a learned society on the one hand, and as a national governmental authority on the other. The term "national (governmental) authority" refers - throughout the text - to such a body of nation-wide competence as e.g. a ministry (or department in certain countries) or another governmental agency thus the alternatively used words "ministerial", "departmental" or "inter-departmental" should be understood in this sense.

To perform the above-mentioned tasks, the Academy:

- supports the creative scientific efforts, particularly those expected to lead to new scientific discoveries; to achieve this, it sets up and maintains research institutes and other institutions; coordinates and supports, directly or indirectly, research going on in institutes under the auspices of other national authorities in concert with these bodies;

- determines the main lines and scope of the development and pursuit of basic research and social science research*;

- sees to it that the financial means (research funds), placed at its disposal, are properly handled and distributed;

- is instrumental in bringing research into harmony with the social objectives, in developing the relationship between science and practice; guarantees the freedom of research and the democracy within the whole scientific community; fosters international scientific relations; plays a decisive role in guiding the education of the new generation of scientists, as well as in awarding higher scientific degrees;

- at the request of the Council of Ministers and other national authorities or social organizations, or on its own initiative, expresses its opinion and works out proposals on important scientific issues as well as on matters of vital interest to the country's socio-economic development;

- fulfils its duties - through its corporate bodies, the Central Office and the institutes - as a uniform body.

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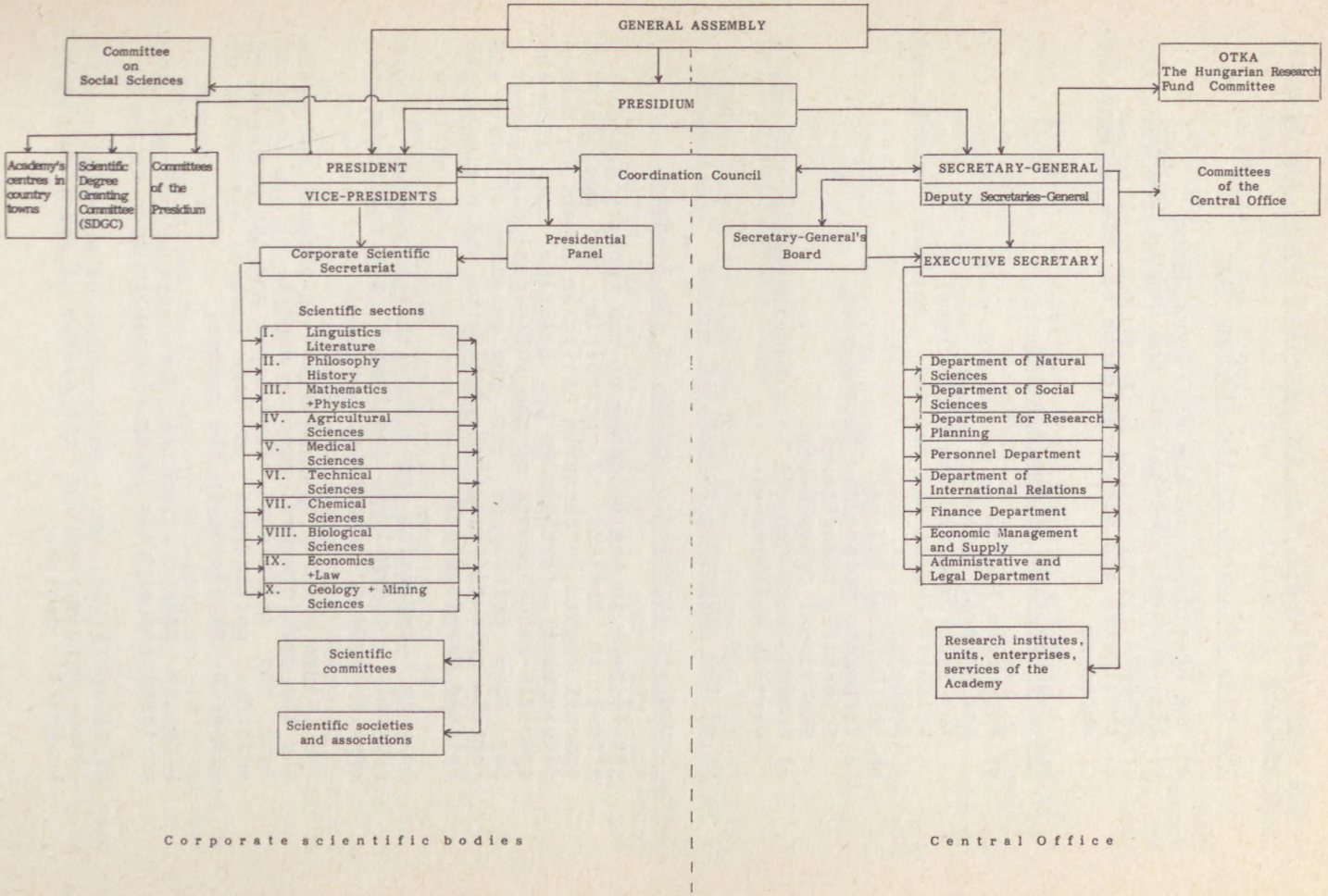
* The term "social science(s)" includes the humanities too.


GENERAL ASSEMBLY
Committee on Social Sciences
PRESIDIUM
OTKA The Hungarian Research Fund Committee
Academy's centres in country towns
Scientific Degree Granting Committee (SDGC)
Committees of the Presidium
PRESIDENT
VICE-PRESIDENTS
Coordination Council
SECRETARY-GENERAL
Deputy Secretaries-General
Committees of the Central Office
Presidential Panel
Secretary-General's Board
Corporate Scientific Secretariat
EXECUTIVE SECRETARY
Scientific sections
I. Linguistics Literature
II. Philosophy History
III. Mathematics +Physics
IV. Agricultural Sciences
V. Medical Sciences
VI. Technical Sciences
VII. Chemical Sciences
VIII. Biological Sciences
IX. Economics +Law
X. Geology + Mining Sciences
Department of Natural Sciences
Department of Social Sciences
Department for Research Planning
Personnel Department
Department of International Relations
Finance Department
Economic Management and Supply
Administrative and Legal Department
Scientific committees
Research institutes, units, enterprises, services of the Academy
Scientific societies and associations
Corporate scientific bodies
Central Office

2. The high officials and the organization of the Academy in general

1/ The high officials of the Academy are:

a) the President and the Vice-Presidents
b) the Secretary-General and the Deputy Secretaries-General
c) presidents and vice-presidents of the scientific sections

2/ The organization of the Academy

a) corporate bodies:
the General Assembly;
the Presidium and its committees;
Scientific sections and the related committees (panels);
b) the Central Office:
Corporate Scientific Secretariat;
Scientific Departments;
Functional Departments;
c) Coordination Council (to harmonize the Academy's various activities)

3. Tasks of the corporate scientific bodies

The corporate scientific bodies of the Academy:

- participate in the guidance of the country's research effort in matters of principle and methods with special regard to research having an impact on future development; furthermore - starting out from the specific requirements of the individual disciplines - lay down principles for the guidance of basic and social science research; follow up and evaluate the related developments;

- help in harmonizing research with the country's socio-economic objectives, and foster the relations between science and practice;

- pay close attention to progress in science and evaluate the developments; prepare reports on the state of both the individual disciplines and the branches of science; participate in the general evaluation of research activities in the country;

- help in making scientific forecasts of economic importance and express their opinion in such matters;

- participate in the development of scientific manpower supply and of the system of granting higher scientific degrees;

- make proposals on the publication of scientific books and journals and on the principles of international scientific relations;

- organize various scientific congresses and other meetings to discuss scientific questions and research achievements, thereby promoting and strengthening the democratic and critical spirit of the scientific community;

- sponsor scientific societies and associations with a view to fostering scientific and cultural activities: in the case of the establishment of a new scientific society, give opinion as to whether the goals of the new institution comply with the interests of science and society;

- on their own initiative, give their opinion about important scientific issues as well as matters of vital importance for the country's socio-economic development.

4. Members of the Academy

Members may be elected from among Hungarian and foreign scientists:

a) Hungarian members are titled "ordinary member of the Hungarian Academy of Sciences" and "corresponding member of the Hungarian Academy of Sciences", respectively;

b) foreign members are titled "honorary member of the Hungarian Academy of Sciences".

Eligible to a "corresponding member" is any Hungarian citizen who bears the title "Doctor of Science", whose research results in his/her particular field of study are outstanding by all standards and whose personality, civil and moral behaviour well deserves the esteem of the scientific community and the whole society. Eligible to an "ordinary member" are those corresponding members who have achieved outstanding results and excelled in public scientific affairs since their election to a corresponding member.

Recommendations for the election of members are made by the Presidium to the General Assembly on the proposals of the competent scientific sections: members are elected by the General Assembly by secret ballot.

Members belong to that scientific section of the Academy on the proposal of which he/she was elected. If more

than one section made the proposal, the Presidium will decide - after the election - on the member's proper section.

Hungarian members receive a regular honorarium.

5. The General Assembly

1/ The supreme body of the Academy is the General Assembly. Participation of the ordinary and corresponding members in the work of the General Assembly is a duty following from membership.

2/ General Assembly should be held once a year. The Presidium may convene the General Assembly whenever it finds appropriate; the Presidium is bound to convene an extraordinary General Assembly on the written proposal of one third of the membership.

3/ The General Assembly is chaired by the President or, if he is prevented, by a Vice-President appointed by him or, if the Vice-Presidents are simultaneously prevented, by a commissioned member of the Presidium.

4/ Falling within the competence of the General Assembly are:

a) to lay down science policy guidelines for the entire field of activity of the Academy in accordance with the national science policy;
b) to debate, approve and give opinion of reports on the Academy's role in guiding scientific life, on its activities as a corporate scientific body, as well as on the activities of its institutions;
c) to determine and - if necessary - to modify the statutes of the Academy;
d) to establish or to cease a scientific section, or to transfer a certain branch of science from under the competence of one section to another's supervision;
e) to elect, release or recall the President, Vice-Presidents, and members of the Presidium every five years or - if necessary - during the period of the cycle;
f) to make recommendation to the Council of Ministers on the appointment or release of the Secretary-General and Deputy-Secretaries-General;
g) to elect new members, Hungarian and foreign;
h) to judge appeals against disciplinary or exclusive decisions taken by the Presidium;
i) to make decisions on all issues submitted either by the Presidium or by Hungarian members to the General Assembly.

6. The Presidium and its committees

Between two general assemblies, the continuous operation of the Academy's scientific bodies is ensured by the Presidium whose voting members are the President, the Vice-Presidents, the Secretary-General, the Deputy-Secretaries-General, the elected members of the Presidium, presidents of the scientific sections, (if prevented, the vice-presidents), and the President of the Scientific Degree Granting Committee.

Falling within the competence of the Presidium - among others - are:

a) to do the preparatory work for the subsequent General Assembly and to prepare the Presidium's report; to lay down principles for the subsequent election;
b) to give effect to decisions taken by the General Assembly or to see to it that they are carried out;
c) to debate scientific conceptions of nation-wide importance and development forecasts, and to formulate proposals to this effect;
d) to take a stand in major issues concerning the overall science policy and scientific development;
e) to take a stand on national scientific research plans;
f) to formulate proposals on important issues of science and science policy for the Council of Ministers or for other government agencies and organizations outside the Academy;
g) to supervise the activities of the Scientific Degree Granting Committee (SDGC); within this the Presidium

   1/ makes proposals on the appointment or release of the president, secretary, and members of SDGC;
   2/ approves the bye-laws of SDGC;
   3/ takes a stand on proposals made by SDGC concerning the general questions of scientific extension training to be submitted to the Council of Ministers;
   4/ at intervals determined by it and considering the related proposals by other supervising authorities, designates the research units to be charged with extension training;
   5/ gives its opinion of those branches of science in which scientific degress may be earned;
   6/ confirms the SDGC's regulations concerning the acception of candidates for a degree, their tasks, the requirements of examination, and other questions related to the evaluation of dissertations (theses);
   7/ judges appeals against SDGC decisions;

h) to make decisions on the establishment, fusion or ceasing of scientific institutions;

i) to take part in furthering international scientific relations in general; to work out guidelines for fostering such relations of the Academy in particular;
j) to pay close attention to the content of the activity of publishing scientific books and journals; to determine operational principles for the Publishing House of the Academy;
k) to conduct and inspect the activities of its committees and of the scientific sections;
l) to define the spheres of authority of the Vice-Presidents;
m) to award the Gold Medal and other prizes of the Academy;
n) to make recommendations on the award of the State Prize and the Kossuth Prize;
o) to give opinion of the Secretary-General's report on his decisions concerning the corporate scientific bodies, as well as other proposals submitted by him;
p) to determine the bye-laws of the Academy's corporate bodies.

Committees of the Presidium

The tasks of these committees are:

1/ To help in performing priorized scientific tasks requiring a complex approach, the Presidium operates permanent committees whenever necessary, it may set up committees working jointly with the presidia of foreign academies and with other national authorities.

2/ To work out important scientific topics, the Presidium may set up ad hoc committees, led by the scientifically most competent vice-president (or member of the Presidium) in each case when the scientific competence of one particular section cannot be established unambiguously.

3/ To encourage and coordinate the regional-type tasks of research activities in the country, the Presidium operates regional committees acting under statutes and bye-laws passed by the Presidium.

4/ The Presidium also operates functional committees of a permanent character to handle the special problems of fields it regards important.

7. Scientific sections of the Academy and the related scientific committees

The Academy as a corporate body fulfils its scientific functions through its scientific sections and, mainly, through the related committees.

The scientific sections are the Academy's corporate units organized by individual or closely related branches of science and scholarship.

The scientific sections of the Academy are as follows:

I. Section of Linguistics and Literary Scholarship
II. Section of Philosophy and Historical Sciences
III. Section of Mathematics and Physical Sciences
IV. Section of Agricultural Sciences
V. Section of Medical Sciences
VI. Section of Technical Sciences
VII. Section of Chemical Sciences
VIII. Section of Biological Sciences
IX. Section of Economics and Law
X. Section of Geological and Mining Sciences

The responsibilities of the scientific sections include:

a) to take a stand on scientific and science policy questions in fields falling within their competence; to evaluate the state of the given branch(es) of science; to work out guidelines for their development;

b) considering the specific requirements of the respective field of study, to evaluate, follow with attention and theoretically support the guidance of basic and social science research;

c) to keep track of the scientific activities and progress of the scientists working in the given field(s): to make proposals to the SDGC in matters of training scientists; to give the President their opinion of the appointment, etc. of the leading officials of research institutes, universities, professors, and so forth, as well as of the objectives and other scientific problems of higher education;

d) to nominate new Hungarian and foreign members;

e) to organize scientific committees; to define their scope of duties and to supervise their activities;

f) to evaluate the activities of research institutes pertaining to the given field(s);

g) to formulate the section's publication plan (books and periodicals) and to keep track of the publishing activities in the given fields;

h) to prepare reports to the General Assembly and the President;

i) to make proposals on honours and awards;

j) to organize scientific lectures and debates;

k) to give scientific support to societies and associations working in their respective field(s);

l) to participate in formulating the science policy aspects of international cooperation and in developing international scientific relations;

m) to express opinion in all relevant issues of their respective field(s) of study.

Sections are to hold a meeting usually once a month, but at least quarterly.

The organizational framework necessary to fulfil the above duties is created by the sections through electing a president, a vice-president and also consultative members who may be elected from among the chairmen of the section's scientific committees, heads of research institutes and university research units, and other outstanding scientists. In addition, appointed representatives of ministries and other national authorities may also, participate - in an advisory capacity - in the section's work. The number of elected and appointed members should not exceed one third of the section's total membership.

Scientific committees of the sections

To handle the problems of the individual disciplines or branches of science, the sections organize permanent, and to scrutinize individual scientific problems ad hoc committees. Furthemore, inter-sectional complex committees (panels) may also be organized to perform certain tasks, either regular or occasional.

The chairmen, secretaries and members of the scientific sections are elected by the competent scientific bodies, while those of the inter-sectional complex committees by the sessions of the respective sections (for a period of five years).

The responsibility for the section's activities rests with its chairman who is elected - if possible - from among its ordinary or corresponding members.

Duties of the scientific committees

A scientific committee is to perform all the tasks delegated to its competence by the respective scientific section; debates all relevant problems pertaining to that area; organizes various discussions and debates, lectures, consultations, conferences, and other scientific meetings; takes a stand on scientific matters with special view to science policy and research organization, and also makes proposals in such matters. The permanent committees should keep track of and evaluate the progress of their respective field, promote its development by all applicable means and report thereon to their section, keeping other scientists in their field also informed.

8. The high officials of the Academy and their responsibilities

Part A: The Academy as a corporate scientific body

1/ Leadership over the Academy as a corporate body is excercised by the President.

- The President is elected by the General Assembly from among the ordinary members for a period of five years, and is confirmed in this post by he Presidential Council of the Hungarian People's Republic;

- The responsibilities of the President include:

a) to uphold the positions taken and recommendations made by the General Assembly and the Presidium;
b) to guide and coordinate corporate scientific activities as a whole;
c) to represent the Academy as a corporate scientific body both home and abroad;
d) to submit proposals and reports prepared by the corporate bodies to higher authorities; to make arrangements for similar applications and commissions submitted to Academy to be properly handled;
e) to charge commissions for elaborating guidelines for science development;
f) to make proposals on honours and awards;
g) to initiate disciplinary procedure against a member, if necessary, and to appoint members for the board of inquiry;

The President is responsible for his activities to the Council of Ministers;

2/ The President is helped in fulfilling his duties by the Vice-Presidents. Whenever prevented, he is deputized by a vice-president assigned by him who then acts in his sphere of authority.

- The vice-presidents are elected by the General Assembly from among the members, for a period of five-years.

- It is their tasks to direct the vice-presidential inter-sectional committees, to operate occasional corporate bodies to coordinate the activities of scientific sections belonging to their authority, and to perform tasks of an interdisciplinary character.

- In fulfilling their duties, the vice-presidents are in regular contact with the President, the Secretary-General, the presidents of the respective sections, and with the competent Deputy Secretary-General.

- The Vice-Presidents are responsible for their activities to the Presidium.

3/ Presidents and vice-presidents of the scientific sections (henceforward: presidents of sections) are elected by the respective sections from among their members for five-years.

A president of section

- directs the section's corporate scientific activities;

- represents the section in matters of science and science policy;

- in order to coordinate the corporate scientific and administrative activities, maintains regular relations with the heads of higher corporate bodies, and also with the Secretary-General and the competent Deputy Secretary-General;

- between two meetings of the section acts for it and reports on his/her activities to it;

- sees to it that the decisions relating to the section are properly executed;

- is responsible for his/her activities to the meeting of the section and to the Presidium and the General Assembly;

- is helped in his/her work or deputized, if prevented, by the vice-president of the section.

Part B The Academy as a national governmental authority

1/ The Secretary-General

- The Academy fulfils its function of managing and coordinating research throughout the country and of supervising its institutions through the Secretary-General.

- In respect of basic research and social science research, the related positions taken by the Presidium are in force. In other matters of management the Secretary-General acts with due regard to the opinions and recommendations of the corporate bodies. The Secretary-General - empowered by the Council of Ministers - has the legal status of the head of a national governmental authority.

- The Secretary-General is appointed - for a definite period of time - from among the members of the Academy by the Council of Ministers upon the proposal of the General Assembly.

- The Secretary-General is responsible to the Council of Ministers, but also reports on his activities to the General Assembly and the Presidium. It is incumbent upon him to give effect to the opinions and recommendations of the corporate bodies as well as to enforce their positions relating to the nation-wide guidance of basic and social science research.

2/ The Secretary-General is helped in his work by Deputy Secretaries-General who are appointed - on proposal by the General Assembly - mostly from among the members of the Academy by the Council of Ministers for a five-year period.

The Council of Ministers may recall the Secretary-General and the Deputy Secretaries-General during their terms upon the proposal or with the consent of the General Assembly.

The Secretary-General controls the Academy's administrative organization, the Central Office, through the Deputy Secretaries-General and the Executive Secretary, the latter being the head of the Central

Office. This Office - acting as a national governmental authority - performs all the administrative tasks incumbent upon the Academy as to the nation-wide direction of research, participates in controlling and managing the Academy's research institutes, and carries out organizational and administrative tasks necessary to the regular operation of the corporate scientific bodies.

9. The Central Office of the Academy

1/ The nation-wide role of the Academy in the guidance and coordination of R and D

The Academy:

a) performs the function of guiding - at a national level - basic research in the natural sciences as well as social science research included in the state plans;
b) determines the main directions and scope of the pursuit and development of basic and social science research;
c) sees to it that the financial means (research funds), placed at its disposal, are properly handled and distributed;
d) participates in the elaboration and supervision of national research plans;
e) coordinates - at a national level - Hungary's participation in the non-governmental international scientific organizations;
f) sees to it that the Academy's tasks in scientific research and in research coordination, as specified by the Council of Ministers, are given effect, and that pertinent proposals, evaluations are made and opinions given;
g) organizes and supports research that fall in line with its tasks and are going on in institutes under the auspices of other national authorities;
h) performs the functions of scientific personnel policy incumbent upon it;
i) fulfils the tasks incumbent upon it as regards the management of scientific research institutes;
j) gives its opinion of significant investments serving R and D purposes;
k) provides for the modernization and operation of the R and D information system;
l) provides for the operation and management of the The Hungarian Research Fund (OTKA), a government foundation for the support of basic research in the natural and social sciences on a competitive basis.

In its supervisory function, the Academy

a) sets up and maintains research institutes to conduct research serving to meet the country's social demands and satisfying the objectives arising from the progress of science, and also other institutions to assist in these activities; defines the scope of activities of these institutions, including the organizational measures to be taken to facilitate the performance of new tasks and excercises supervision over them;
b) provides for the personnel and material conditions for research going on in its institutes; plans the financial, instrumental and other requirements; decides on the allocation of funds available;
c) provides for the appropriate execution of various legal measures in the institutes, and issues the necessary enacting clauses;
d) by taking appropriate measures and laying down rules, promotes the practical application of results achieved by the Academy's research units;
e) excercises administrative supervision over the Academy-related scientific associations and societies, and also over the Academy's regional centres;
f) directs and supervises the activities of the Library and the Publishing House of the Hungarian Academy of Sciences;
g) defines the tasks arising from the international relations of the Academy's institutions, and controls their execution.

The Academy's Coordination Council - consisting of the President, Secretary-General, Vice-Presidents, Deputy Secretaries-General and the Executive Secretary - is to assist in bringing all what has been stated above into harmony.

2/ Function of the Central Office within the Academy's Organization

a) The Central Office:

- performs tasks as decision-making preparation, planning, organizing, coordinating, executing, supervising, and carries out the administrative activities necessary to the Academy's proper functioning;

- performs all the specialized administrative duties which arise from the nation-wide direction of basic research in all branches of science and social science research included in

the state plans as well as from those tasks of directing and coordinating the country's research effort which are incumbent upon the Academy; helps in directing the Academy's research institutes, and performs a wide range of functions connected with science, science policy, research organization and the related administration to help the corporate bodies with their work;

- acts as a national governmental authority within the public administration system;

- is supervised and conducted by the Secretary-General through his deputies and the Executive Secretary appointed by him.

b) All of the tasks of the Academy listed under 9.1/ are carried out by the Secretary-General through the Central Office.

c) All the tasks related to the direction and supervision of the Academy's research institutes are carried out by the Secretary-General through the Central Office. These tasks are as follows:

- to set up, reorganize or cease research or other budgetary institutions or enterprises;

- to define the fundamental tasks of such institutions;

- to lay down operational and organizational principles for such institutions;

- to analyse and evaluate the activities of the Academy's institutions;

- to issue normative legal measures and individual regulations;

- to set - on occasion - actual tasks related to research, consultation, expertise, and so forth;

- to take initiatives, measures to promote the practical applications of result achieved within the Academy's research network; to encourage and back up research ventures; to develop new operational forms;

- to organize and encourage relations maintained by the Academy's institutions among themselves and with other R and D or related institutions outside the Academy;

- in order to make research achievements widely known to participate - in cooperation with the Academy's competent bodies - in guiding the publication of books and periodicals;

- to promote the utilization of inventions made within the Academy's research network;

- to analyse the demands of the Academy's institutions on (budgetary) funds, investments, personnel; to plan and coordinate the allocation of financial funds as approved by the Council of Ministers in accordance with the science policy objectives; to inspect and audit the economic management of the Academy's institutions;

- to supervise the personnel management of the Academy's institutions;

- to lay down principles, guidelines, etc. for international scientific relations maintained by the institutions;

- to excercise the state control over the Academy related scientific societies and associations;

- to perform all other duties prescribed occasionally by the Secretary-General.

d) It is also the tasks of the Central Office to do preparatory, organizing and administrative work, as described in statutes and specific bye-laws, in order to enable the corporate scientific bodies to fulfil their functions.

3/ Direction of the Central Office

a) The Secretary-General - within his jurisdiction as specified by law - conducts either on his own authority or through his deputies, the performance of all tasks incumbent upon him;

b) The Secretary-General acts on his own authority mainly in the following matters:

- representing and speaking for the Academy before higher or coordinate national authorities;

- preparing memoranda, recommendations and reports to be submitted to higher or coordinate national authorities;

- issuing normative regulations, institutions, as well as directives for the execution of higher legal messures;

- controlling the use of the Hungarian Research Fund (OTKA) and the Research Fund of the Academy (AKA);

- issuing regulations concerning the establishment, reorganization or ceasing of research institutes, enterprises, services and other institutions belonging to the Academy;

- establishing the regulation and the operational mode of the Central Office; approving its work and supervisory plans;

- making proposals concerning the award of government honours, and the award or withdrawal of the honour badget "For Excellency in Work" and other non-governmental honours;

- establishing the personnel policy to be conducted - in accordance with the prevailing laws - by all institutions of the Academy; marking out those posts which are qualified as "very important" or "confidential";

- policy-making as to the tasks coming from the Academy's internal and international relations that are incumbent upon the Central Office;

- policy-making as to the Academy's information, press and other propaganda activities.

c) The Deputy Secretaries-General

- independently direct the activities of the organizational units relegated by the Secretary General to their jurisdiction, and are responsible for all the duties the Secretary-General assings to them;

- decide on matters falling within their competence; keep the leaders of organizational units under their supervision informed, and ask them to give account of their work; regularly report on their work to the Secretary-General;

- represent the Academy - under special authorization - in various organizations, both home and abroad, as well as before other national authorities in matters related to their supervisory activities;

- by the assistance of the departments under their jurisdiction:

  = coordinate the elaboration of research plans and conceptions;
  = analyse, evaluate, give opinion and keep track of the activities of the research units;
  = initiate and back up working relations among the Academy's institutes and also between those and other research units;

- excercise the employer's right under special legal provisions;

- in fulfilling their duties, may have recourse to the help of the Academy's departments or institutions; keep each other informed on their own activities, especially in case of unavoidable overlappings;

- if the Secretary-General is prevented, may act for him in matters under his personal jurisdiction;

- being prevented for a longer period, their deputization is provided for by the Secretary-General.

d) The Executive Secretary

The Executive Secretary, appointed by the Secretary-General, exercises the intra-mural administrative supervision over all organizational units of the Central Office, extending to all aspects of management, administration and operational order. Thus the Executive Secretary - among others -

- takes care of bringing the working conditions of the Central Office up-to-date;

- excercises direct supervisison over the organizational units falling within his competence;

- organizes, conducts, coordinates and supervises the execution of tasks included in decisions by the Secretary-General and other higher officials, and in plans or other dicisions binding on the Central Office;

- represents the Central Office in working relations with the competent officials of public administrative, social or other organizations;

- under authorization by the Secretary-General, may issue regulations, circulars, etc. of binding force on the Central Office and other institutions of the Academy;

- excercises employer's right within his competence as defined by special regulations.

4/ General responsibilities of the leading officials of the Central Office

a) Heads of departments and independent administrative sections (henceforward: department heads) are responsible for the activities of the organizational unit under their authority.

Belonging among their general responsibilities are:

- to organize, direct and supervise - within their respective field - the execution of tasks following from the organizational statutes of the Central Office as well as from decisions by the above-mentioned higher authorities, in a planned, professional and efficient manner;

- to define the specific scope of activities of their staff and to provide for adequate working conditions;

- to urge the continuous extension of the (professional, political, economic) knowledge, and foreign language proficiency of their staff-members;

Belonging among their particular responsibilities are:

- to maintain relations with the corresponding leading officials of other national authorities relative to their respective fields;

- to formulate the position to be upheld by their organizational units in dealings with other related external bodies and - under special authorization - to of represent the position the Central Office;

- to maintain relations with foreign organizations related to their special fields under authorization by the Secretary-General or Deputy Secretary-General;

- to make proposals of structure and operation of the organizational units under his authority;

- to decide on or give opinion of matters of discipline concerning their staff-members;

- under special legal provisions, to excercise employer's right and to participate in the job qualification of staff-members; to give opinion of matters concerning the wages, rewards, etc. of staff-members.

Deputies to the department heads act for them in case of prevention, and - in a division of labour defined in accordance with the given department's tasks - participate in the direction of the department and carry out all tasks assigned to them.

Other leading members on the department's staff (senior counsellors, counsellors), under authorization by the department head, carry through organizational, and many other tasks independently and with personal responsibility.

b) Scientific secretaries

Under the leadership of the President, Vice-Presidents and presidents of the scientific sections, the scientific secretaries fulfil scientific and organizational-administrative functions related to the work of their respective section. They work within the framework of the Corporate Scientific Secretariat, and are directly supervised by the Secretariat's head.

c) Heads of administrative sub-divisions

Heads of administrative sub-divisions (other than the scientific ones), their deputies, and heads of independent groups are responsible for the activities of the organizational unit under their authority. Subject to the intentions of their respective department head, they organize and conduct the professional, efficient and well-planned execution of tasks incumbent upon them.

5/ Structure of the Central Office

a) The Central Office is divided into the following departments:

- Corporate Scientific Secretariat

- Scientific departments such as
  = Department of Natural Sciences
  = Department of Social Sciences

- Functional departments such as
  = Personnel Department
  = Department for Research Planning
  = Department of International Relations
  = Department of Finance
  = Administrative and Legal Department
  = Department for Economic Management and Supply

b) As regards their proper status in the organization, ranked equally with the departments are:
the Secretariat of the Scientific Degree Granting Committee and the Secretariat of the Intercosmos Council.

c) To assist in executing the Academy's tasks of national purport (as listed on the proceding pages), the President and the Secretary-General are authorized to set up organizational units (office, secretariat and the like) which - under their direct inspection - perform certain specific duties. Such are within the Central Office: the Secretariat of the Committee on Social Sciences, Office of the Hungarian Research Fund.

d) To carry out specific tasks (e.g. research coordination), the Secretary-General may also set up offices or secretariats on a provisional or permanent basis. Their plan, status and functions are defined simultaneously with their establishment.

e) By virtue of special provisions by the President and the Secretary-General, the Institute for Research Organization, in addition to its functions (preparatory work for decision-making, research organization, original research, etc.) laid down in a separate legal measure, also carries out such activities as

- attending to the Academy's overall information system;

- performing functions related to the Academy-supported research units (e.g. financial and labour management);

- organizing extension training for leading officials;

- acting as a secretariat for the Coordination Committee of Non-Governmental International Organizations, for the Presidential Committee on Public Education, and for the Permanent Committee on Research Evaluation;

- editorial work on some publications of the corporate bodies and of the Central Office.

6/ Responsibilities of the departments and other units of the Central Office

The departments of the Office are working in close cooperation with one another and with the corporate scientific bodies.

a) The Corporate Scientific Secretariat

All organizing, preparatory and administrative tasks necessary to the appropriate function of the formerly discussed scientific bodies are performed by this Secretariat. In matters of principle and content, the Secretariat is conducted by the President and Vice—Presidents, while in matters concerning the scientific sections by the respective section presidents. In its activities, the Secretariat relies on the secretariats of the individual scientific sections.

b) Department of Natural Sciences

The main responsibility of this Department is to contribute to increasing the effectiveness and fruitfulness and to raising the quality and the social usefulness of the country's and primaily the Academy's natural science research efforts (including technological, medical, and agricultural research) by its organizing, coordinating, supporting, analysing, supervising, etc. activities.

To achieve all this, its major tasks are:

- to do scientific preparatory work underlying the medium and long-range conceptions and

plans; therefore, in cooperation with the Academy's corporate bodies, research institutes, and also with the experts of other institutions, the Department prepares studies, analyses concerning the expectable trends and the socio-economic impact of progress in science;

- to keep track of and analyse the international trends and developments in the relevant branches of science, and the related trends in science and technology policies, international and national;

- to encourage and back up scientific relations in the given fields between the Academy's research units and individual companies;

- to pay close attention to the state of significant basic research ventures in the country; to initiate measures to be taken to increase the support of basic research underlying further development;

- to do the preparatory work for and review regularly the execution and performance of those research tasks (programs, main lines of research etc.) of national priority that fall within the Department's authority and are incumbent upon the Academy;

- through regular working relations, to be well informed on the state and developments of research tasks (programs, etc.) of national priority, the responsibility for which rests with other national authorities, but in whose performance the Academy's research units also participate;

- to coordinate groundwork for starting Academy-based research programs; to follow up the performance of such programs, etc.

Furthermore, considering advice by the corporate scientific bodies and according to guidelines by the Secretary-General, the Department:

- prepares competitions for research grants from the Academy's own research fund;

- gives the grant applications out to be evaluated, and prepares the related decisions by giving proposals for acceptance or rejection;

- takes care of the further handling of the accepted research projects (contracts, etc., evaluation of results).

It is also the task of the Department to take part in and give the Secretary-General opinion of scientific investigations underlying certain major government investments (reconstructions).

The Department excercises supervision over the Academy's natural science research institutes.

c) Department of Social Sciences

The main responsibility of this Department is to contribute to increasing the effectiveness and fruitfulness and to raising the quality and the social usefulness of the country's and primarily the Academy's social science research efforts by its organizing, coordinating, supporting, supervising, etc. activities.

To achieve this, its major tasks are:

- to perform all coordinating tasks related to the planning of research tasks of national priority initiated either by the Academy or by its institutions, to the control of the execution of plans, and to the socio-economic utilization of research results, in close cooperation with the Corporate Scientific Secretariat and with other departments, particularly with the Department for Research Planning;

- to cooperate with the scientific and science policy units of other national authorities supervising social science research within their particular competence, and also with those Party institutions which are engaged in social science research;

- to participate in executing the tasks and positions taken by the Committee on Social Sciences;

- to encourage and back up many-sided relations between the Academy's research units and the universities, public collections (museums, libraries, archives), party-institutions;

- to promote various forms of association serving the practical utilization of research results and to further organized cooperation between the Academy's institutes and university research units;

- to supervise the activities of social science societies and associations under provisions of law;

- to keep track, in the Academy's network, of the developments in major basic research efforts important - either directly or indirectly - for the future of the social sciences and to initiate measures to be taken to support basic research underlying further development;

- to review and analyse foreign science policy initiatives, decisions, ideological actions affecting the social sciences;

- to promote scientific (bi- and multi-lateral) international relations; to take part in performing the scientific tasks following from the activities of the Hungarian-Soviet Committee on Cooperation in Social Sciences and of the Conference of the Vice-Presidents for Social Sciences of the socialist academies of sciences;

- to carry through tasks related to priorized research programs, to the direction of research institutes, and to competitions for research grants.

d) Personnel Department

The Personnel Department's primary tasks lies in the overall supervision of personnel policy conducted within the Academy as well as in its institutions, following instructions by the Secretary-General. By this supervision relying on cooperation with the other departments, the Personnel Department is to give general effect to the cadre policy principles (general rules for personnel policy at a national level), and by preparing comprehensive statistical analyses; should keep the Secretary-General informed of the most characteristic developments within the Academy's entire staff.

e) Department for Research Planning

This Department's primary task is to take part in performing those functions of the Central Office which are concerned with the scientific foundation of the national economic plans, with the medium- and long-range planning of research, with the execution and supervision of the plans, and with the organization and management of

research; furthermore to do preparatory work for decision-making to supply information, and - within its scope of authority - to maintain relations with the concerned national authorities.

In addition to its primary task, the Department is engaged - among others - in preparing decisions, positions to be taken and recommendations to be made by the Academy's high officials in such matters as

- elaborating guidelines and medium- and long-range development plans for bringing the Academy's and the whole country's research basis up-to-date;

- further developing the methods of research management - more specifically those of research planning and organization - of decision-making and supervision;

- the objective evaluation of research activities; increasing the effectiveness of research; furthering the socio-economic utilization of research results;

- developing and operating an information system serving the mentioned functions.

In the fields specified above, the Department's tasks include the initiation or actual elaboration or review of analyses, forecasts, conceptions, action plans, and so forth.

The Department's other responsibilities cover:

- to keep track of the international developments and experiences of science policy, research planning and organization; to analyse them and to initiate their domestic utilization wherever applicable;

- to perform those tasks which are incumbent upon the Academy in its capacity of a national authority in the country's uniform national system of statistics; to supervise the statistical activities of the Academy's institutions;

- to prepare cooperation agreements at the level of national governmental authorities in fields falling within its competence, to supervise these at certain intervals, and to coordinate the work going on under such agreements.

f) Department of International Relations

The Department is engaged in preparatory, organizing, coordinating, etc. activities related to the establishment, developing and maintenance of international scientific relations for the benefit of the Academy.

The Department's general tasks are:

- to participate in the analyses of the social, economic and cultural advantages of the Academy's international scientific relations;

- to work out short-term and medium-range strategic conceptions and proposals to facilitate the identification of the main points of international scientific cooperation;

- to prepare analyses and reports based on the continuous monitoring of developments in international relations;

- to meet the obligation of giving statistical reports on international scientific relations;

- to perform all administrative tasks related to international relations (arrangements for travels, meetings, etc.).

g) Department of Finance

The primary tasks of this Department is to prepare plans for the financial, material, and manpower demands of the Academy's research activities in compliance with the scientific objectives and in cooperation with all departments concerned; to facilitate the effective use of resources placed at its disposal by virtue of government decisions, by means of interest-oriented regulations, coordination, organization; reallocation, supervision, etc.

To fulfil the above duties, the Department performs such functions as labour management, labour safety, accountancy, financial control and auditing, and others as assigned to it; excercises overall economic supervision over all institutions of the Academy, including the Academy's regional centres, enterprises and services; initiates and backs up research ventures promising economic results.

h) Administrative and Legal Department

This Department carries out tasks related to preparatory works for decision-making, coordination, supervision, information supply,codification of legal measures taken by the Academy, and other special legal and administrative tasks.

Thus among many other things, the Department:

- gives final form to all documents and reports to be submitted by the Academy to higher authorities;

- identifies those items of laws, legal measures and other higher legal documents that contain tasks falling to the Academy; makes proposals for the designation of the organizational units to be made responsible for the execution of such tasks;

- hands out documents and planned legal measures submitted by external institutions to the Academy to be scrutinized and reported on;

- prepares the Secretary-General's board meetings, produces the necessary minutes, memos and other documents, and participates in the execution as well as supervision of the decisions taken there;

- prepares reports on the performance of the Academy's tasks to the high officials of the Academy, and prepares such reports to be submitted to the Council of Ministers;

- prepares and codifies legal measures taken by the Secretary-General and other legal provisions of the Academy, and takes care of their publication after approval;

- keeps the Presidium informed on important developments in science policy;

- gives legal advice and assistance to all institutions of the Academy;

- lays legal foundations for the establishment, reorganization, etc. of the Academy's institutions.

i) Department of Economic Management and Supply

This Department is responsible for carrying through tasks connected with the budget of the Central Office and other partly independent budgetary units, and for the financial, labour management and accountancy services of the Central Office; it is also responsible for the social welfare services of the Academy, as well as for tasks connected with the maintenance of the premises and with provisions for adequate working conditions.

j) Secretariat of the Intercosmos Council

As an independent department of the Central Office, under the direct inspection of the Secretary-General, the Secretariat is responsible for carrying out preparatory, operative-organizational and analysing tasks necessary to the activities of the Intercosmos Council, an inter-ministerial body under the direction of the Council's President.

k) Secretariat of the Scientific Degree Granting Committee (SDGC)

The Secretariat deals with matters concerning the organization, economic management and administration of the SDGC, including also preparatory tasks connected with the degree granting and extension training activities of its corporate bodies.

l) Secretariat of the Committee on Social Sciences

The Secretariat is responsible for all organizational, economic and administrative tasks related to the activities of the Committee. Its tasks are defined by the president of the Committee, or - if prevented - by his vice-president (in fact the Deputy Secretary-General for social sciences), who,at the same time, supervises the Secretariat. The Secretariat's head, the secretary of the Committee, is responsible for its work.

The Secretariat's special tasks are:

- to prepare, organize and perform the sessions of the Committee;

- to carry out information tasks related to the Committee's work;

- to deal with the Committee's financial matters;

- to develop the information system serving the nation-wide guidance of social science research forming part of the national plans;

- to perform the administrative tasks connected with the Committee's work;

- to carry out all occassional tasks assigned to it by its leading officials;

- to maintain continuous connection with the Corporate Scientific Secretariat, the Department of Social Sciences, and whenever necessary with other competent departments of the Central Office.

m) Office of the Hungarian Research Fund (OTKA)

Under the direct supervision of the Secretary-General, the Office is responsible for preparatory works, operative and administrative tasks related to the OTKA activities in liaison with the Corporate Scientific Secretariat.

CHAPTER II.*

THE STATE OF THE ACADEMY'S RESEARCH NETWORK - WITH A HISTORICAL RETROSPECT

1. Hungary's R and D effort in international comparison

Like most socialist countries, Hungary, too, has arrived at a stage of economic development where improving the qualitative characteristics of production and speeding up scientific and technological development as its underlying factor has become a necessity. In addition to the intrinsic development of science, the goals of scientific research are increasingly influenced by the actual situation and orientation of the economy and society, as well as by the resulting effects appearing in the form of exigencies and freedom of varying degrees. In Hungary, too, ever more conspicuous are those modifications in science policy, which tend to give priority to more straightforward and profit-oriented research ventures serving a more rapid-rate technological development.

The seventies saw an increase in the role and weight of science and technology policies all over the world. There was a corresponding increase in the number of bodies or authorities engaged in R and D policy-making, and this type of activity shifted towards the governments. Research planning became a decisive factor even in the highly developed industrial countries. The number of those engaged in R and D accounts for an average of 1.5 % of the population in the developed countries, while that of scientists and engineers for 0.75 %. The proportion of researchers in social sciences increased dynamically over the seventies, but the number of researchers in the technological field continued to be the largest. In parallel with the growth of the R and D personnel, there was also an increase in expenditures on R and D activities, the real value of which, however, was considerably lessened by a general inflation. The sctructure of expenditures by sources

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* This chapter is based on a study by Márton Tolnai (director, Institute for Research Organization) in: Statisztitkai Szemle, vol. 65 (1987), No. 7. pp. 656-677.

also changed: the ratio of state budgets decreased while the contribution of the productive sector increased considerably. The role and weight of the sector of higher education also showed an upward tendency. The ratio of basic research became stabilized, that of applied research lessened to some extent, while the growth of experimental development was noticeable.

According to UNESCO statistical yearbooks, the world total expenditures on R and D can be estimated at 208 billion US dollars, and the number of the world's scientists and engineers at 3.8 millions. As compared to 1970, this number increased 1.5-times, while that of the expenditures 3.3 times at current prices. The share of Europe (including the Soviet Union) in financial means amounts to 103 billion dollars (or about 50 %) and in the total number of scientists and engineers to 2.2 millions (about 60 %).

In 1980, Hungary's share - as regards R and D personnel - in international R and D exceeded the ratio of her population in the world's total population; however, her place among the European countries is less favourable. Hungary's share in the world's total population is 2.4 thousandths, but in that of R and D expenditure and of the number of scientists and engineers is 3.8 and 5.8 thousandths, respectively. As compared to similar data on Europe (including the Soviet Union), the proportion of Hungarian population is 14.3 thousandths, and that of expenditures and scientists and engineers is 7.6 and 9.9 thousandths, respectively.

According to the number of scientists and engineers per 10000 inhabitants, Hungary ranks somewhere towards the lower end of the middle of scale, and this index (for 1982) is better in each of the socialist countries.

Order of countries according to the number of scientists and engineers per 10000 inhabitants (1982)

1.	German Democratic Republic	72.4*	
2.	Soviet Union	53.0	
3.	Bulgaria	47.0	
4.	Japan	39.4	
5.	Czechoslovakia	31.1	
6.	United States**	30.3	
7.	Poland	21.8	
8.	Federal Republic of Germany**	20.8	
9.	Hungary	20.5	
10.	Finland	19.7*	
11.	The Netherlands**	19,7*	
12.	Norway	18.8	
13.	Italy	9.1*	
14.	Ireland	8.9	

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* Data for 1981.

** Data on the social sciences and humanities are not comprehensive.

1980 data on R and D expenditures in terms of US dollars show that Japan spent 23 times, the Federal Republic of Germany 19 times, Norway 9 times, the German Democratic Republic 4 times, Italy 2.5 times, Czechoslovakia 1.8 times, Poland 1.4 times, and Belgium 1.2 times as much on R and D as Hungary.

2. Main characteristics of R and D in Hungary in 1985

In Hungary, the statistical observation of R and D activities (or R and D statistics) covered 1300 research units in 1985. These research units employed a total of 77648 people, accounting for 1.58 % of the active population . This ratio, however, shows a slightly downward tendency; the respective figures for 1976 and 1981 are 1.62 and 1.67. (Reduced to full-time equivalent - henceforward: FTE - the total number of R and D employees was 48745 or 0.99 % of the active population). The number of scientists and engineers was 36753 accounting for 7.5 % of active professionals (i.e. diploma-holders, or those having graduated from higher educational institutions). This ratio indicates a remarkable decrease which may be attributed not so much to the actual decrease in the number of researchers as to the dynamic increase of higher education.

The number of higher scientific degree-holders (members of the Academy, doctors and candidates of science) was 8661 in 1985 which accounts for 1.47 % of the professional population.

Expenditures on R and D in 1985 amounted to a total of 27612 million forints (or 2.67 % of GDP). The reduced amount of R and D expenditures (i.e. without expenditures on the "related activities" of research units - production, services - and on social welfare services and others) totalled 24375 million forints (equalling 2.35 % of GDP) in 1985.

Data according to the types of research show that in 1985 the share of basic research in R and D expenditures was 10.5 % (in on-going research projects: 12.2 %). The share of applied research in R and D expenditures was 29.5 % (in on-going research projects: 32.4%), while the corresponding figures for experimental development were 59.5 % (and 55.4 %) respectively. In the period of 1976 to 1985, the proportion of applied research and experimental development showed a slightly rising trend while the ratio of basic research decreased. (Expenditures on basic research reached a bottom of 9.7% in 1984.)

The number of on-going research projects or tasks was 31139 in 1985 - an essentially stable average over the previous ten years -, which implies that a researcher (in terms of FTE) worked on 1.4 projects on the average.

Figures for inventions and innovations in research units are rather modest in proportion to the number of projects. The number of patent applications was 1106, and that of patents granted 901 within the country, and 1940 and 1108, respectively, abroad. R and D statistics for 1985 register 4181 innovations submitted and 2441 accepted.

Data on the publications of R and D units are more promising:

Table 1.

Publishing activities of R and D units

Publication	1976	1981	1985
In Hungarian			
books	1005	946	1191
journal articles	12412	11981	14084
dissertations, theses	603	474	473
In foreign languages			
books	252	231	383
articles in the Academy's "Acta" series	1540	2251	2640
acticles in foreign journals	3586	4027	5284
Others	5788	6031	7551

The growing number of foreign-language publications is noteworthy.

Analysing the R and D units by the supervising national authorities (see footnote on page 1), it turns out that the Ministry of Culture and Education stands first with its 45.6 % of research units and 40.8 % of scientific degree-holders, although its position is not so favourable in respect of expenditures (8.7 %). (The majority of research units belonging to the Ministry of Culture and Education carry out research only on a part-time basis and most of the relating costs are covered by the educational budget.) The Ministry of Industry acounted for 54.2 % of the expenditures and for 42.8 % of the researchers (FTE), while the ratio of scientific degree-holders was not more than 6.9 %, and this ministry supervised only 13.8 % of all research units.

The Hungarian Academy of Sciences with its comparatively balanced shares in research personnel (12.4 %), expenditures (13.6 %) and degree-holders (17.1 %), is responsible for 2,9 % of all research units, embracing 36 research institutes, 73 supported and 2 other research units.

Table 2.

R and D units by supervisory national authorities (%, 1985)

Supervising authorities	Distribution of					
	R and D units	Total personnel	Researchers (FTE)	Scientific degree-holders	Total expenditure	Ongoing projects
Hungarian Academy of Sciences	2.9	9.4	12.4	17.1	13.8	5.4
Ministry of Industry	13.8	40.8	42.8	6.9	54.2	47.0
Ministry of Agriculture and Food	17.9	12.2	9.7	11.1	7.5	12.3
Ministry of Culture and Education	45.6	18.8	15.2	40.8	8.7	18.6
Ministry of Health	13.9	8.4	6.6	19.6	3.3	3.7
Other authorities	5.8	10.3	13.4	4.4	12.5	12.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

3. The research network of the Hungarian Academy of Sciences with a historial retrospect

To evaluate the state of the Academy's research network, it seems appropriate to divide the period discussed here (1950 to 1985) into three phases. First the trends in development will be discussed in the period prior to 1970, then those in the seventies. The subsequent section will be devoted in full to the development of the Academy's research network from 1981 to 1985.

a) Trends of development prior to 1970

Like several other - mainly socialist-type - academies, the Hungarian Academy of Sciences, too, acts not only as a learned society through its members and scientific bodies , but it also maintains a wide range of research institutes of its own. (For details see chapter I of this volume.)

1/ Development of the institutional network

The Academy's network of research institutes started to develop in the early fifties in the field of the natural sciences, and within this, primarily through creating a research basis for physics: the Central Institute for Physics (KFKI for short) in 1950. This was followed in 1954 by the establishment of the Institute of Nuclear Research in Debrecen and of the Research Group for Theoretical Physics. To promote the further development and application of Hungarian mathematical research of international renown, the Research Institute for Applied Mathematics (from 1955: Institute of Mathematics) was set up in 1950. The Academy took over the Research Institute for Astronomy in 1951. The following year saw the foundation of the Central Research Institute for Chemistry and the Institute of Experimental Medicine. A new impetus was given to progress in biological research by setting up the Institute of Biochemistry and the Institute of Agrobiology in 1950, the Institute of Genetics in 1954. This research basis was enlarged by taking over the Biological Research Institute at Tihany in 1951 and the Botanical Research Institute at Vácrátót in 1952 from the then Ministry of Education.

Agricultural research within the Academy became promoted when the Ministry of Agriculture handed over the Agricultural Research Institute and its Experimental Farm at Martonvásár, along with the Research Institute for Veterinary Medicine in 1953, and two years later also the Research Institute for Agricultural Chemistry. It was in 1955, too, that the Research Laboratory for Soil Biology was founded in Sopron.

Institutes in the field of technological research developed on a larger scale outside the Academy's network. The Academy's research basis in the field of technological studies of a theoretical nature and of the geo-sciences started to be established as late as the mid-fifties. Although the Institute for Instrument and Measurement Technology was founded in 1952, incorporating the Electron Microscope Laboratory too (set up in 1950), its tasks only partially included research. In 1955 the Geophysical Research Laboratory, the Geodetical Research Laboratory in Sopron, and the Geochemical Research Laboratory were established. A decision was taken in 1956 on the setting up of the Research Laboratory for Cybernetics. The

Research Laboratory for Oil Mining was founded in 1957, and the Research Institute for Technical Physics in 1958.

The development of the Academy's social science research network began with taking over three institutes (Institute of Linguistics, Institute of History, Research Group for Geography) from the Ministry of Education in 1951. The Research Group for Folk Music was set up in 1953 to promote the time-honoured Hungarian folk music research. 1954 saw the formation of the Institute of Economics. In 1955 the Academy took over the West Hungarian (Transdanubian) Research Institute and the Institute for Child Psychology from the Ministry of Education, and the Institute for Law and Administrative Sciences from the Ministry of Justice. In the same year the organization of the Institute of Literary Studies commenced. The Institute of Philosophy was formed in 1957.

Despite many problems of organization and planning to be tackled by the young institutes in the first few years, their majority became organizationally consolidated by the late fifties so that several of them have grown into the main research centre of their respective field by now.

To bring about better working conditions for research and to meet the instrument needs of its institutes, the Academy took over the Research Equipment Manufacturing Company in 1952. Right after its reorganization, the Academy invested considerable amounts in the reconstruction of its Library which has since developed into one of the country's largest and most important scientific collections.

In the period between 1958 and 1961 more than ten research institutes were established or reorganized. 1958 saw the establishment of the Research Group for Archeology, the Observatory of Solar Physics, the Research Institute for Technical Physics, the Research Group for Stereo-Chemistry starting their activities in 1960 were the independent Research Laboratory for Automation, the Research Group (later Institute) for Industrial Economics and the Research Institute for Technical Chemistry. The Bartók Archives and the Research Laboratory for Chemical Structures were set up in 1961. The Central Research Institute for Physics was temporarily placed under the direct supervision of the National Atomic Energy Commission (until 1966). In 1966 the Laboratory for soil Biology merged with

the Research Institute for Soil Science and Agricultural Chemistry.

With the first National Long-Range Plan for Scientific Research (henceforward OTTKT) drawn up and the Long-Range Development Plan of the National Economy prepared, along with the modification of the Academy's responsibilities and the increasing role of sciences in general, it became necessary to analyse the state of the research network in detail and to specify the research fields to be priorized. Most of the research institutes to be given priority made considerable progress in the sixties, particularly the Central Research Institute for Chemistry, the Research Institute for Automation, the Research Institute of Experimental Medicine, the Research Institute for Technical Chemistry, the Research Institute for Agricultural Economics (formerly called Institute for Agricultural Plant Economics, placed then under the authority of the Ministry of Agriculture), the Agricultural Research Institute, the Research Institute for Soil Science and Agricultural Chemistry, and the Research Institute for Veterinary Medicine.

Between 1963 and 1965 subsequent new institutes came into being: the Research Group for Sociology and the Research Group for Microbiology in 1963: from the reorganization of the Institute for Child Psychology, the Institute for Psychology was formed in 1965; the Afro-Asiatic Research Centre was established in 1965, the Research Group for Ethnography in 1967, the Research Group for Art History in 1966; and the construction of the Biological Research Centre in Szeged was started in the same year.

Proposals concerning the establishment of several independent institutes and research groups were embodied in research groups attached to university chairs, or - through development - by extending the scope of activities of the existing institutes. The Group for Science Organization (presently Institute for Research Organization) started its activities in 1967 in an effort to assist the Academy's leadership with their work and to promote research in science policy and research organization .

Thus the Academy's institutional network became essentially established by 1969. Out of 43 research institutes, 16 were active in the social

sciences, 4 in chemistry, 7 in the technical and geo-sciences, 3 in agricultural sciences, 2 in medical sciences, 4 in biology, and 7 in the fields of mathematics, physics and astronomy.

2/ Other supported research units

Playing a remarkable role in the Academy's research effort are university chairs (institutes), libraries, museums, archives and other types of institutions. It was as early as the late forties that the then Hungarian National Research Board initiated the practice of promoting university research through special goal-oriented support funds. This form of supporting research was taken over by the Academy: it created financial and other material conditions for the research of topics initiated by the Academy; organized auxiliary posts to assist leading scientists with their work at universities; broadened the research basis of universities by gradual transfer of research posts to university chairs.

The Academy's support to these chairs was considerably increasing after 1954. In 1954 the number of supported research units was 227 and the number of those employed in an Academy post at university chairs 100, the support fund amounting to 6.2 million forints. In 1957, 287 research units were supported having a staff of 438, with a total of 19.6 millions, which accounted for 23.7 % of the Academy's total research expenditures. The support of university research by the Academy was highly important in those years so much the more as the enhanced role of educational work resulting from the extension of professional training tended to push research activities at universities into the background. In the intensive phase of developing the institutional network, these supported research units constituted the basis, the core of institutionalization.

The large number of such research units, however, made their guidance more difficult, the support funds got scattered and their efficiency decreased. Therefore the Presidium - already at the 1958 General Assembly - urged on the overhaul of the support system, proposing that support be concentrated on a smaller number of research units and that research groups attached to chairs be formed. In 1960 to 1961 considerable progress was made in concentrating the supported research units

at chairs. In 1968, the number of such units dropped to 198 while the amount of support rose to almost 30 million forints.

The first National Long-Range Plan for Scientific Research (OTTKT) in 1962 and the related financial source the Development Fund for Scientific Research (TKFA) prompted other ministries, which supervised universities, to join in the new support system. The conditions of research thus supported markedly improved as regards the supply of both funds and instruments, particularly as compared to the university research units not supported.

3/ Financing - personnel

The Academy's research network thus made a remarkable development over the sixties. In ten years (1958 to 1968) the number of employees at the Academy's research units (institutes, university chairs) rose from 2041 to 5347 and the amount spent from the budget on research from 104.9 million forints to 384.7 million. During the sixties, the material conditions of research also improved. New buildings for institutes were built, and - particularly in the second half of the decade - there was a considerable improvement in the supply of research equipment and instruments. While in 1961 the gross value of fixed assets of institutes had equalled 500 million forints, it exceeded 1800 million by 1968.

The share of the individual branches of science within the Academy's research personnel for 1958 and 1968 is as follows:

Table 3.

Distribution of research personnel by major branches of science

Branch of science	1958 %	1968 %
Natural sciences	50.1	57.2
of which		
mathematics, physics	32.3	35.3
chemistry	9.8	14.5
biology	8.0	7.4
Technical sciences	11.9	15.6
Medical sciences	8.6	6.5
Agricultural sciences	10.7	6.7
Social sciences	18.7	14.0
Total	100.0	100.0

b) Trends of development in the seventies

The country's network of research institutes was essentially formed by the early seventies. Therefore it became necessary to change over from the extensive to the intensive phase of development as it was also suggested by the Science Policy Guidelines issued in 1969 by the Central Committee of the Hungarian Socialist Workers' Party. This implied that - along with increasing support at an unchanged rate - the conditions, both material-financial and technical, of the existing basis should be improved, research topics be concentrated, and the specific indicators of research be bettered.

1/ Development of the institutional network

In this period establishment of new research institutes could be initiated exceptionally, only in such cases where the new and rapidly progressing branches of science were hardly possible to be cultivated properly within the framework of university research units (chairs). With all this in mind, the Academy considered the following fields of research as requiring new institutes or the reorganization of the existing ones

- biology: to facilitate the conduct of research in a complex manner, the Academy built and started the work of the Szeged Biological Research Centre (SZBK) in 1973;

- computer science: to promote a more coordinated research effort in this field, by merging the Research Institute for Automation with the Centre for Computing Techniques and by modifying the organizational structure, the Academy established, the Computer and Automation Research Institute (1973);

- investigations in world economics: to further thoroughgoing and complex research in this field, the Afro-Asiatic Research Centre was reorganized into the Institute for World Economics (1973);

- pedagogics: to uplevel pedagogical research formerly rather neglected, the Research Group for Pedagogics was set up in 1972.

At the same time, a certain concentration of research capacities was also carried through by establishing

- the Geodetical and Geophysical Research Institute in Sopron, incorporating the former Geodetical and Geophysical Laboratories and the Seismological Observatory of the Loránd Eötvös University (1972);

- the Central Research Institute for Chemistry by fusing it with the Research Laboratory for Chemical Structures;

- the Institute of Musicology, incorporating the former Research Group for Folk Music (1974).

The number of research institutes remained unchanged between 1975 and 1980. Still certain modifications took place: the Research Laboratory for Geochemistry together with a number of other research units attached to university chairs were united to form an institute called Natural Science Research Laboratories, and the Group for Economic Information was reorganized to form part of the Institute of Economics, now called Economic Information Service.

The internal structure of research institutes was also characterized by stability except a few minor modifications the Hungarian Danube Research Station changed into a scientific section of the Botanical Research Institute; the Enzymological Section of the Szeged Biological Research Centre became an indenpendent Institute of Enzymology remaining, however, part of the Szeged Centre. Minor reorganizations were taking place at the Research Institute for Soil Science and Agricultural Chemistry, the Institute of History, the Institute of Philosophy, Institute for World Economics, Institute for Mathematics, Institute of Psychology, and at the Institute of Sociology.

2/ Other supported research units

Changes of greater importance were taking place in the field of the Academy-supported university research units. This basis - on account of transferring part of the support to the supervising ministries (Ministry of Education, Ministry of Justice, Ministry of Agriculture and Food) - decreased from 148 units in 1970 to 106 in 1974, then to 85 in 1980. By the end of the decade,

supports accounted for some 7 % of the Academy's budget and for about 3.5 % if returns from sales are also calculated.

Guidelines for the reorganization of this support system were formulated by the Resolution of September 1st 1972 of the government's Science Policy Committee, according to which the role of university research should be enhanced and the capacities of research at universities should be exploited more than before.

In this context the Academy had a double task. On the one hand it had to take part in taking measure to improve the material, personnel - and management - related conditions of university research, and, on the other, it had to work out - in accordance with this complex task - more reasonable forms of supporting the chairs, and to drop or hand over the supporting funds which did not fit in the conception. This task was solved in a rather inconsistent manner, giving rise to much subjective or even personal opposition.

In 1977 the Academy's scientific and functional departments elaborated guidelines for the organization and management of research support, along with methods for their implementation. Accordingly, the Academy would give support in the form of special commissions too to its research groups at university chairs from the Central Research Fund (KKA), with a particular view to promoting the solution of the Academy's high-priority tasks. Experiences subsequent to transfer of the Academy's support to other national authorities showed that the research conditions in the formerly Academy-supported research units had deteriorated markedly despite all guarantees the universities undertook on taking over the responsibilities. Underlying behind this problem was the fact that the complex conditions necessary to high-quality university research were not created satisfactorily - neither simultaneously with the reorganization of the support system nor subsequently.

3/ Research personnel

In spite of the principles of intensive development enunciated in the early-seventies, the tendency in the number of researchers and other research personnel indicated an explicit extensive development, particularly from 1970 to 1975 and even as late as the first part (1976-77)of the 5th

five-year plan (1976-1980). Between 1979 and 1977, the total number of employees made a 1.5-times increase, which meant a yearly average increase of 6.1 %, while that of the researchers was 7.8 %. Institutes in the fields of technology and natural sciences increased most dynamically in personnel (in 1977 182 % in technology and 164 % in the natural sciences compared to 1970). These figures were the lowest in the agricultural science not more than 8 % in seven years, and with 15 % in the social sciences. Adding considerably to this dynamic growth of personnel in the institutes of technology and natural sciences was their new responsibility to accept R and D commissions from enterprises and other organizations and thus to employ researchers and other personnel to the debit of returns from contracts. In addition to production-related special research tasks, commissions from enterprises might extend to so-called scientific services (measurements, expertise, computations, etc.) or to turn out unique or small-series products requiring special expertise or equipment.

After 1977 there was a strong slow-down or even an actual decline in personnel in practically all fields of science, thus by 1980 the total personnel of institutes had decreased by some 4.5% as compared to 1970. On the other hand, there was an increase in the number of higher scientific degree-holders working at research units. Including the supported research units too, their number rose from 820 in 1976 to 932 in 1980, i.e. increased by some 13.5 %, and all in all accounted for about 30 % of the total number of researchers. The Academy's research activities gained weight within the country's entire research basis: its share in the intellectual capacity of the country's all research institutes rose from 8 to 8.6 %, and in respect of the Academy's entire network, it accounted for 10 % of all employees of all research institutes.

On examining the data on the personnel of research institutes, certain changes in the proportion of the individual branches of science may be observed (see Table 4).

Table 4.

Distribution of the personnel of research institutes by major branches of science

Branch of science	Percentage distribution of employees in research institutes in	
	1970	1980
Natural sciences	61.7	65.8
Technical sciences	8.7	10.0
Medical sciences	3.4	2.6
Agricultural sciences	6.9	6.2
Social sciences	19.3	15.4
Total	100.0	100.0

As may be seen in Table 4, the ratio of those employed in social, agricultural and medical research had decresed by the late seventies.

Considering the whole period, the total personnel increased by an annual average of 3.7 %, however, the corresponding figure for the period of the 5th five-year plan (1976-1980) was only 2 %. The number of researchers kept increasing throughout the period at a more rapid rate than that of the total personnel. The ratio of researchers to the auxiliaries - as a result of the above tendencies - did not improve significantly. Even in 1980 the ratio of auxiliaries within the total staff was as low as 23 %.

The thematic concentration of the "research capacity" is partly characterized by its participation in the high-priority research programs. According to estimates, the Academy's research institutes and other research units devoted some 60 % of their capacity to the priority-fields until 1976, and 75 to 80 % up to 1980.

Another characteristic of the research capacity is the number of ongoing and completed research. During the 5th five-year plan period (1976-1980) some 6000 topics were investigated, out of which 1800 were successfully completed. From among the latter, results from 478 research ventures were started to be utilized in practice within the plan period.

4/ Expenditures and economic management

The Academy's expenditures on R and D grew dynamically throughout the seventies. The 1970 total expenditures more than trebled by 1980, showing a rate of increase of 13 % on an annual average. This rate of increase was more rapid than that of the country's total R and D expenditures, and this is mainly due to the enlarged quantity of research on contract. The country's total R and D expenditures increased 2.5 times during the decade with an average rate of increase of 10 %. (Actually, the total R and D expenditures over the 5th five-year plan rose by 4.1 % on a yearly average according to indices corrected by the implicit price-index of the national income.)

Within the Academy's R and D expenditures, the amount of current expenditures quadrupled, representing an annual average growth of 16 %, and showing an increase of 6 % more than the national average. The situation with investments is just the reverse the Academy with its annual average growth of 5.8 % lagged behind the national annual average of 6.2 %. Investments of the Academy increased only by 75 % over the decade, and in the second half of the decade their amount exceeded that of the previous five years by 60 %.

The distribution of R and D expenditures by branches of science over the whole period is shown in Table 5.

Table 5.

Distribution of R and D expenditures by major branches of science

Branch of science	Expenditures	
	%	million forints
Natural sciences	75.0	12942.2
Technical sciences	11.8	2035.1
Medical sciences	1.5	267.6
Agricultural sciences	5.3	915.9
Social sciences	6.4	1097.6
Total	100.0	17.258.4.

During the period discussed here, the natural sciences and technology research gained, while the rest, particularly agricultural research, lost in weight.

The dynamics of current expenses in various branches of science show the following rather variegated picture.

Table 6.

Changes in current expenditures

Average changes (%) in	period		
	1970-1975	1975-1980	1970-1980
natural sciences	19.5	15.9	17.7
technical sciences	27.7	8.1	17.5
medical sciences	8.0	10.2	9.1
agricultural sciences	10.1	4.5	7.3
social sciences	12.5	9.0	10.7
all branches together	18.0	13.0	16.0

Trends in investments by branches of science are illustrated by data on total investments.

Table 7.

Trends in investments by major branches of science

Amounts in million forints	period		
	1970-1975	1975-1980	Total
natural sciences	1296.2	1941.6	3.237.8
technical sciences	121.2	555.9	677.1
medical sciences	18.3	33.0	51.3
agricultural sciences	165.0	79.9	244.9
social sciences	74.0	66.8	140.8
all branches together	1674.7	2677.2	4351.9

More significant investments in the agricultural and social sciences were made in the first part of the period, while in the technical sciences in the late seventies. Investments in the natural sciences showed even an upward trend.

It was still in the 4th five-year plan period (1971-1975) that the Szeged Biological Research Centre, the "Academy Tower" in Budaörsi út (Budapest), the phytotron station of the Agricultural Research Institute at Martonvásár, Astrodome No. 3 at Piszkéstető of the Astronomical Research Institute, the thermo-dynamical research facility of the Central Research Institute for Physics, and a new building for the Research Institute for Technical Physics were handed over for use.

Several major investments were completed in the 5th five-year plan period (1976-1980) too: new buildings and research facilities for such research units as the Central Research Institute for Physics, West-Hungarian Research Institute, Central Research Institute for Chemistry, Research Institute for Technical Chemistry, and so forth.

The Academy spent considerable amounts on purchasing important research instruments, equipment, electronic devices, etc.

Simultaneously with the pursuit of extending the applications of electronics, demand on computer-based systems of research instruments and other facilities serving to improve the effectiveness of research was increasing. Investments in these fields exceeded those in other areas of measurement technology. This was all the more important since the net value of fixed assets in proportion to their gross value lessened considerably, dropping from 70 to 72 % in the early years of the decade to 67 %. This obsolescence afflicted the natural sciences most heavily.

There were significant changes in the ratio of research to other types of scientific activities (services, production) within the Academy's institutes during this decade.

Table 8.

Shares of various types of research in total expenditures

Year	Shares of types of research calculated on the basis of expenditures on research topics (%)		
	Basic research	Applied research	Experimental development
1970	58.6	28.4	13.0
1975	49.2	27.3	23.5
1980	45.6	37.0	17.4

The decrease in the share of basic research, however, was accompanied by an increase in the average cost per one basic research topic (in the second half of the period by more than 70 %).

Among the institutes' expenses the proportion of scientific services and mainly of productive activities became markedly higher as shown in Table 9.

Table 9.

Percentage shares of scientific services and productive activities in the expenses of institutes

Year	Scientific services	Productive activities
1970	2.8	8.6
1975	5.3	18.9
1980	4.7	26.2

Expenditures on productive activities were the highest (33.2%) in institutes classified among the natural sciences. The ratio of basic research expenses was the lowest - as compared to the average - in the technological field with 13.6 %.

Of all changes in the system of financing, it was the introduction of contract-based research that had the strongest effect on the Academy's research basis. Returns from such research amounted to some 155 million forints in 1970, making a sevenfold increase by the end of the period, which largely

contributed to the material and technical development of the Academy's network, to the modernization of the institutes, and to making it possible that a certain part of the returns could be used as a Central Research Fund (KKA). This Fund is the only resource the amount of which is not determined in advance and which is at the free disposal of the Academy; its order of magnitude is about 10 % of the Academy's annual R and D budget.

c) The state and development of the Academy's research network in the 6th five-year plan period (1981-1985)

Relying upon high-level party and government decisions and pursuant to the country's socio-economic objectives, a reorganization of the national R and D network was started in the period of the 6th five-year plan. Prior to that a new system of medium- and long-range R and D planning was introduced with the National Medium-Range Plan for Scientific Research and Development (OKKFT) and a thoroughgoing revision and then closing down of the National Long-Range Plan for Scientific Research. Recommendations were made on the improvement of the system of granting higher scientific degrees and on a uniform system of training scientists, and also on the modification of the forms of funding technological development and publicly financed researches. Proposals were also worked out concerning the management and guidance of scientific research. A plan was elaborated for the transformation and development of the R and D network.

1/ Organizational changes in the institutional network

The tasks connected with the further development of the country's research network were formulated by the Science Policy Committee in 1980. Its resolution established that a plan should be prepared for the development and transformation of the R and D basis to serve the improvement of the entire R and D network in the long run.

The goals of this development plan should be achieved step by step in pursuance of the following principles:

- major research ventures of an interdisciplinary nature, which are related to several branches of science and require special approaches, seem practical to be conducted in research centres;

- R and D tasks oriented towards achieving direct economic aims - technological and agricultural - seem practical to be performed - on technological and economic consideration - within:

  = enterprisal research units;
  = research institutes jointly owned by several enterprises concerned in the given research;
  = research institutes working as independent units within an enterprise or trust;
  = development institutes;

- research related indirectly to economic aims (in pure and social science) seem practical to be conducted primarily within the framework of universities, archives, major special libraries and museums of a national character, as well as within the so-called "skeleton-institutes"*;

- during the elaboration of this development plan, it is expedient to identify those institutes engaged in natural science and complex social science research which are justifiable to continue their work in the organizational form of research institute in the long run too.

This reorganization affected the Academy's network too: as a result, the following organization changes have taken place since 1980.

The Research Group for Pedagogy was placed under the authority of the Ministry of Culture and Education in 1981. In the same year the Central and Eastern European Research Centre of the Academy was formed within the K. Marx University of Economics. 1982 saw the establishment of the Academy's Inter-Institutional Peace Research Centre. In 1984 several existing research units (the West-Hungarian Research Institute, certain sections of the Geographical Research Institute) were combined to form the Centre for Regional Studies.

Since 1981 the Group for Science Organization has been active as an independent research unit named

* A "skeleton-institute" means a research institute with a certain permanent staff that forms the core of its scientific and administrative direction, and with provisional groups or teams composed of scientists invited from other research institutes for a certain term to perform special research tasks.

Institute for Research Organization. The responsibility for supervising the Academy's supported research units in matters of personnel and economics management rests with the Office of Supported Research Units (1983) which acts as a section of the former institute. In 1985 the Hungarian Research Fund Office was set up also within the above-mentioned institute to perform operative and administrative tasks related to the Research Fund of the Academy and the Hungarian Research Fund. This latter office became an independent unit of the Academy's Central Office in 1986.

Within the natural science research network - among others - the following changes took place. In 1981 the Research Laboratory for Acoustics ceased. The Research Institute for Solid-State Research of the Central Research Institute for Physics disunited to form the Institute for Solid-State Research and the Research Institute for Microelectronics. The Research Institute for Plant Protection was placed under the Academy's authority. The Research Laboratory for Oil Mining is now working with a modified scope of activity as a Research Laboratory for Mining Chemistry. The Observatory for Solar Physics and the Institute of Astronomy were united to form the Research Institute for Astronomy.

The Research Group for Microbiology separated from the Academy's network. Considerable modifications were carried out in the scope of activity of the Institute of Biology at Tihany, and under the name of Balaton Research Institute for Limnology it is envisaged to function as a "skeleton-institute" in the foreseeable future. In the Botanical Research Institute at Vácrátót greater emphasis has been given to ecological research, as mirrored by its new name Research Institute for Ecology and Biology.

In October 1981, the Secretary-General of the Academy issued guidelines for introducing new and more flexible forms of research institutes. This gave rise to the formation of the Association for Studying Economic Law in the social science field and to four new enterprisal formations within natural and technological science institutes.

Research going on under contracts with enterprises (e.g. industrial companies) have become organic part of the activities of research institutes, and contributed much to their incomes.

The first Academy-related "economic associations"* were formed in 1978, but their majority came into being between 1981 and 1983. In late 1983 7 research institutes were participating in 22 such associations (9 in computer science, 4 in microelectronics, 3 in the machine industry, 3 in biology-bio-technology, and 3 in agricultural research).

At the end of 1983, in 7 out of 21 natural science and technological research institutes 109 intramural "economic working collectives"** were active with a total membership of 757, out of which 242 were researchers. Their number has been increasing since 1983.

Playing an increasingly important role in the Academy's institutional network are the subsidiary and joint stock companies. The subsidiary of the Institute for Isotope Research has been active since 1984 and is involved in commercial transactions too. The subsidiary of the Computer and Automation Research Institute started to work in 1984, and it was also in the same year that with the participation of the Szeged Biological Research Centre, the Biotechnology Corporation was established to specialize in highly valuable biotechnological products.

No significant change has taken place since 1983 in the Academy's system of support. The number of supported research units was 68 in 1985 (39 in the natural science fields inclusive of agricultural

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* This term refers to associations of researchers and/or other members of the Academy's institutes who with the consent of and/or under contract with their institutes carry out business-type activities (that may be research, service, production, etc.) in their subject field/s/; these new formations have much in common with enterprises, and may work within one institute ("collectives"), or on an inter-institutional basis or in cooperation with non-Academy-related institutions, industrial, etc. enterprises ("associations").

** For explanation see the former note.

medical and technological research, and 29 in the social sciences). The Academy has 22 research groups at university chairs of 10 universities (19 in the natural and 3 in the social sciences) and supports the 39 research units at 12 universities (19 in the natural and 20 in the social sciences). The number of the "other supported research units" (mainly at public collections) is 7 (1 in the natural and 6 in the social sciences).

The research units supported by the Academy may be divided into two main types (1) research groups with a relatively large staff which - together with the related chairs - may as well be regarded as "minor research institutes" forming a remarkable part of not only the Academy's, but also the whole country's research basis, and which maintain considerable international relations; (2) research units at universities and in public collections, the activities of which meet strongly felt demands on research in certain fields.

2/ Personnel

The total number of employees in the Academy's research units rose from 7271 in 1981 to 7305 in 1985, i.e. by not more than 34 persons in four years. (Compared to figures for 1980, data on the 1985 personnel show a decrease by 96.) Within all this, the number of scientists and engineers engaged in R and D activities in full time equivalent increased in all branches by a total of 164 persons in four years, while the number of auxiliaries and other personnel assisting with R and D tasks decreased. In 1985, 530 persons were active in the Academy - supported research units, out of whom 249 were researchers.

Stagnation in the total number of personnel during the 6th five-year plan period or its decrease compared to the previous period, results from a 1980 resolution of the Science Policy Committee concerning the reduction of personnel in research institutes.

It prescribed a reduction of 7 % for the Academy's network to be carried through by December 31, 1985, which - calculated at the actual number of personnel as of December 31, 1978 - involved 530 people. On account of certain favours pendent on the execution ahead of schedule, the Academy carried through its prescribed reduction by the end of 1982.

Despite this reduction, data on the Academy's personnel offer a somewhat more favourable picture than the overall national data on R and D personnel do. This may be explained by the extension of the Academy's scope of activities, by the new tasks of research institutes, and by the taking over of some institutes from other national authorities. In Hungary the total number of those employed by R and D units shows a decrease of 6.8% in 1985 compared to 1981, while the corresponding figure for the Academy shows an increase of 0.5 %. Taking the same period, the national total of scientists and engineers in R and D indicates a decrease by 0.5 %, whereas at the Academy there was an increase of 4.2 % in this respect.

Data on research personnel reduced to FTE show similar figures. Taking all research units together, an increase of only 0.9 % can be observed as against a 6.3 % increase in the case of the Academy. Tendencies in the changes in total personnel are also favourable.

Decrease in the total number of personnel and in the number of auxiliaries is largest in the natural sciences. Auxiliary personnel - and generally other research personnel - grew only in agricultural research. (This, however, does not so much imply new employments as regroupings of people between a research institute and its enterprise.)

The number of auxiliary personnel per one researcher within the Academy's R and D network is shown in Table 10 (reduced to FTE).

Table 10.

Changes in the number of auxiliaries per one researcher in the 6 th five-year plan period

Branch of science	1981	1982	1983	1984	1985
	persons in FTE				
Natural sciences	0.82	0.61	0.63	0.61	0.63
Technical sciences	0.65	0.35	0.22	0.27	0.26
Medical sciences	1.55	1.62	1.26	1.11	1.23
Agricultiral sciences	0.75	0.80	0.71	0.77	0.82
Social sciences	0.18	0.14	0.17	0.15	0.17
Average	0.64	0.48	0.46	0.45	0.46

Like in all other research units in the country, at the Academy too, the tendency in the supply of auxiliary personnel is far from being favourable. Decrease was most conspicuous in technological research. However, the case is primarily that the auxiliaries leave these institutes but rather that they are regrouped or "redeployed" to servicing or experimental productive jobs.

The numerical increase of higher scientific degree-holders within the Academy lags behind the national average. While almost 5.400 scienfitic degree-holders were employed in the country's research units in 1985, 11.3% more than 1981, the Academy's 920 degree-holder account for an increase by only 7.5 % as compared to its similar research personnel in 1981. It is also true, however, that every fourth scientists and engineers is degree-holder in the Academy's network, while only every sixth at the national level.

Characteristic of the Academy's research capacity is the remarkable publishing activity related to almost 7.500 projects going on in the 6 th five-year plan period (1981-1985) (for details see Table 11).

Table 11.

Publishing activity in the 6 th five-year plan period

Publications	Total number of publications produced at all R and D units	of which those produced by the Academy's staff	
		Number	Percentage of the total
In Hungarian			
books	5402	1007	18,6
journal articles	66608	6510	9,8
dissertations theses	2372	364	15,3
In foreign languages			
books	1607	288	17,9
articles in the Academy's	12958	2225	17,2
articles in foreign journals	23865	5008	21,0
Other publications	35062	7176	20,5

Comparing the ratio of 12 % of the Academy's scientists and engineers (in FTE) to the national total, their publishing activity deserves attention. In the period discussed here, 19 % of all Hungarian-language books, 18 % of the foreign-language books, and 21 % of the articles published in foreign journals were authored by members on the Academy's staff.

3/ Expenditures and material supply

The funding and the material supply of R and D in the whole period of the 6th five-year plan were characterized by a deteriorating tendency. While the annual average growth rate of national R and D expenditures had been (at current prices) 9.3 % in the 5th five-year plan period (1976-1980) the corresponding figure for the 6th five-year plan period (1981-1985) was only 4.7 %.

Trends in the Academy's R and D expenditures (at current prices) in the 6th five-year plan period were very similar to those in the national R and D expenditures with the only exception of a slightly better rate of increase by 5.3 % annual average.

Indices of the national expenditures corrected by the implicit price index of the national income produced, show a decrease by 1.46 % on a yearly average and this well illustrates the actual tendencies of financial-material supply in that plan period. (This slow-down is larger than that in the national income. Thus science policy objective that R and D expenditures should grow at a larger rate than the national income was not kept to during the 6th five-year plan period.)

Indices of expenditures by the Academy's research institutes, corrected by the implicit price index of the national income, show that the average annual decrease in expenditures is 0.9 % in the case of the Academy.

Table 12.

Trends in R and D expenditures

Expenditures	1981	1982	1983	1984	1985
	Expenditures of the Academy's research units				
Million forints	2914	2719	2995	3262	3406
Index at current prices previous year=100.0	110.7	93.4	110.2	108.9	104.4
Comparative price index previous year=100.0	104.2	87.4	104.3	102.5	98.2
1980=100.0	104.2	91.1	95.0	97.5	95.6
	Total expenditures				
Million forints	23367	24773	23549	25979	27612
Index at current prices previous year=100.0	106.4	106.0	95.1	110.3	106.3
Comparative price index previous year=100.0	100.2	99.2	90.0	103.9	100.0
1980=100.0	100.2	99.4	89.5	92.9	92.9

X/ Indices at current prices corrected by the so called implicit price index of the national income.

Investments in R and D during the 6th five-year plan period did not show better tendencies either. It is conspicuous that the Academy's investments were reduced strongly between 1981 and 1983, to a higher extent than were the national R and D investments compared to 1980. In 1984 and 1985, in turn the R and D investment possibilities of the Academy's network were better than those of all other research institutes.

Table 13.

Trends in R and D investments

Investments	1981	1982	1983	1984	1985
R and D-related national investments million forints at current prices	2811	2685	2658	3137	3309
corrected by the investment price index of organizations in the socialist sector					
previous year=100.0	89.6	91.0	93.0	112,2	100.4
1980=100.0	89.6	81.5	75.8	85.0	85.3
Investments by the Academy's research units million forints at current prices	362	279	378	635	718
corrected by the investment price index of organizations in the socialist sector					
previous year=100.0	65.5	73.4	127.3	159.7	107.6
1980=100.0	65.5	48.1	61.2	97.7	105.1

In accordance with the general national trends, the proportion of the state budget as a source of R and D expenditures lessened considerably from 23.5 % in 1981 to 20.5 % in 1981. According to comparative data, corrected by the implicit price index of the national income produced, the amounts this source contributed to R and D expenditures were one - fifth less in 1985 than in 1980. This represents a decrease by 3.9 % on an annual average. This backward tendency of funding in the 6th five-year plan period affected particularly hard the publilcy-financed sector the research institutes, the R and D units of higher education, that is basic research in the first place.

Table 14.

Trends in expenditures per one researcher
(scientists and engineers)

Expenditures	1981	1982	1983	1984	1985
	at all research units				
Expenses per one researcher (thousand forints)	628	692	708	762	809
Reduced expenses per one researcher (thousand forints)	592	609	590	599	597
	at the Academy's research units				
Expenses per one researcher (thousand forints)	545	590	552	594	628
Reduced expenses per one researcher (thousand forints)	514	520	460	466	464

Note: Based on the so-called "reduced data", not including expenses on scientific services, productive activities, nor the time spent on such activities that is the number of researchers is reduced to FTE.

X/ Based on 1980, corrected by the implicit price index of the national income produced.

It may be seen from Table 14. after all, that the Academy's figures for expenses per one researcher (FTE) are much lower than the corresponding national data. This is partly due to the fact that the Academy maintains quite a number of less expensive social science research institutes. Much worse is the Academy's index in the case of reduced indices, corrected by the implicit price index of the national income produced: while national data indicate an increase of 0.8 % in 1985 compared to 1981, the Academy shows a decrease of 9.7 %.

The financial situation of the Academy's institutes in 1985 - including their current expenditures, investments, reconstructions and values of fixed assets - are shown by branches of science in Table 15.

Table 15.

The financial situation of the Academy's institutes
(million forints)

Branch of science	1.	2.	3.	
			4.	5.
Natural sciences	1242.6	455.9	4755.7	2842.7
Technical sciences	1078.3	318.2	1828.7	602.4
Medical sciences	33.5	18.4	151.0	87.7
Agricultural sciences	158.5	54.2	456.2	274.7
Social sciences	209.6	25.5	222.4	140.5
Total	2722.5	872.2	7414.0	3948.0

1. Total current expenditure
2. Investment, reconstruction, overhoul of fixed assets
3. Value of fixed assets
4. gross
5. net

The net value of fixed assets makes up 53 % of the gross value (the corresponding figure was 54 % back in 1981). Even worse is the situation with research facilities in the technological field (33 % as against 54 % in 1981). The gross value of fixed assets in 1985 was 125 % of the 1981 value, while the net value was only 109 %.

In the 6th five-year plan period (1981-1985), there was a considerable change in the research basis in respect of the types of research activities, too. Within the Academy's network the share of basic research in the reduced expenditures on R and D was 44 % and 41 % in 1981 and 1985, respectively: that of applied research was 38 % and 45 %,that of experimental development 18 % and 14 % respectively. The share of basic research continued to have its deteriorating tendency (its share was 60 % in 1970).

Changes in the number of ongoing basic research projects (often also referred to as number of research topics) is even more significant in 1981 41 % and in 1985 only 31 % of all research

belonged to this sphere. The number of research projects slightly decreased in the field of applied research too, while the proportion of experimental development more than doubled (from 10 to 24 %). Besides the differing tendencies of changes in the reduced expenses and the number of research projects, in the case of basic and applied research, expenses per one research topic increased from 1981 to 1985, while in experimental development expenses per one research topic decreased by 1.2 million forints owing to a strong rise in the number of topics. Trends in the reduced expenses of R and D and in the number of research topics are shown in Table 16.

Table 16.

Trends in the reduced R and D expenses and in the number of research topics in the Academy's network

Expenses	Basic research		Applied research		Experimental development	
	1981	1985	1981	1985	1981	1985
R and D expenses (million forints)	629	715	550	790	255	249
Number of research topics	563	517	672	772	141	407
Expenses per one research topics (million forints)	1.1	1.4	0.8	1.0	1.8	0.6

Since contractual research belongs mainly to the category of experimental development, the more than double increase in the number of research topics in a few years, along with the threefold decrease in expenses per one research topic, show the undesired tendency that the Academy's research institutes are only able to obtain the price-returns necessary to their maintenance if they increase the number of undertakings and research ventures. And this can go on only at the expense of basic research and results in the over-burdening and scattering of the capacities.

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Recognizing that scientific research today has become an organic part of socio-economic processes, and being aware of the important role science fulfils in meeting the demands of society, the country's government and political leadership created the Hungarian Research Fund (OTKA) to support high-quality basis research in all branches of science and scholarship. The OTKA's staring fund of 3.8 to 4 billion forints (of which 3.1 billion come from the state budget) makes up 8.4 to 9.4 % the total of R and D-oriented budget for the period of the 7th five-year plan (1988-1990) (meaning 33 to 37 billion forints). The mechanism of OTKA, based on competitive research grant applications, the evaluations of which are made public, may create conditions for high-quality meritorious research institutes, teams or individuals in the broad field of basic research to attain support to their work. However, due to the deterioration of conditions in the 6th five-year plan period (1981-1985), OTKA may - even in the best case - only contribute to making up deficiencies in the basic supply and help in preventing research facilities from further deterioration.

In the 7th five-year plan period (1986-1990), in pursuance of the country's socio-economic objectives, the internal renewal of the Academy's research basis, along with its scientific bodies, is an absolute necessity. A sound selection of institutes, tasks, and the means which underly this renewal, may be ensured by the scientific community's openness and readiness for debates and assessments, relatively free from every local or particular interest of the scientific bodies.

CHAPTER III.

RESEARCH UNITS OF THE ACADEMY

1. Research institutes

Natural and technological sciences

BALATON RESEARCH INSTITUTE FOR LIMNOLOGY
H-8237 Tihany, Fürdőtelep 54-56.,Tel.(86)48-006

Field of research: the coordination of national biological studies related to the protection of the water quality and living world of Lake Balaton, biological studies on the eutrophication of Lake Balaton, studies on the trophic relationship, productivity potential, and material and energy turnover of Lake Balaton, studies on the life processes of the organisms inhabiting Lake Balaton, with special regard to environmental effects, comparative physiological (neurobiological) studies.

CENTRAL RESEARCH INSTITUTE FOR CHEMISTRY
H-1025 Budapest, Pusztaszeri út 59-67. Tel.353-735

Field of research: research in synthetic organic chemistry, natural compounds chemistry, bioorganic chemistry, pharmaco-biochemistry, pesticide research, reaction kinetics, homogeneous and heterogeneous catalysis, electrochemistry and corrosion, polymerization kinetics and polymer degradation, spectroscopy and Röntgen-diffraction, theoretical chemistry.

CENTRAL RESEARCH INSTITUTE FOR PHYSICS (KFKI)
H-1121 Budapest, Konkoly-Thege út 29-33., Tel.699-499

The Central Research Institute for Physics constitutes a research centre within which efforts are concentrated on five main research tasks, accordingly, there are five research institutes as follows.

INSTITUTE FOR ATOMIC ENERGY RESEARCH
Field of research: research into reactor physics, reactor thermohydraulics, reactor-electronics, health physics and radiation chemistry.

RESEARCH INSTITUTE FOR MEASUREMENT AND COMPUTING TECHNIQUES
Field of research: research, development, and practical application of computer aided measuring, data acquisition and data processing systems and the relevant hardware and software elements.

RESEARCH INSTITUTE FOR MICROELECTRONICS
Field of research: research into MOS LSI circuits, magnetic bubble memories, and the development and application of computer aided circuit design and mask production, and the development of technological equipment. Fundamental research into the doping of semiconductors by implantation, thin films, domain physics.

RESEARCH INSTITUTE FOR PARTICLE AND NUCLEAR PHYSICS
Field of research: fundamental and applied research into experimental and theoretical particle physics, nuclear physics, plasma physics, space physics and space technology as well as material sciences and biophysics. The methods of nuclear measuring techniques developed earlier are of great importance in experimental work.

INSTITUTE FOR SOLID STATE RESEARCH
Field of research: theoretical research into solids as well as research involving metal physics, spectroscopy, lasers, partially ordered condensed materials, one-dimensional conductors,liquid crystals and amorphous semiconductors. Applied research is focused primarily on the of lasers in industry and medicine, on the development of methods of investigation.

COMPUTER AND AUTOMATION RESEARCH INSTITUTE
H-1111 Budapest, Kende u. 13-17., Tel.665-644

Field of research: the research and development related to computer science, computer-aided design and manufacture, local and wide-area networks, process control, power electronics and applied mathematics. The main topics in computer science are operating systems, software technology, interactive language and graphics, database management and intelligent systems. The work in CAD/CAM involves the methods, tools and systems required in mechanical and electronic production, including flexible manufacturing systems and intelligent robots. The networking and process control activities are centred around local area systems and intelligent hierarchy control for the chemical and atomic energy industries. The power electronics teams are working on servo drives and transverters. In applied mathematics the topics include modelling, numerical methods, statics, simulation, operational research, and their applications in water resource management, power networks, geological surveying, production control and economics.

GEODETIC AND GEOPHYSICAL RESEARCH INSTITUTE
H-9400 Sopron, Múzeum u. 6-8., Tel.(99)14-290

Field of research: the solution of up-to-date problems in geodesy by mathematical modelling, studies in photogrammetry and complex geodynamics, in the fields of geomagnetic induction, magnetospheric physics, aeronomy and seismology, operation and development of observatories for geodynamics, geoelectromagnetism, atmospheric electricity and earthquakes, supply of observatory data, development and construction of instruments for research purposes.

GEOGRAPHICAL RESEARCH INSTITUTE
H-1062 Budapest, Népköztársaság útja 62.,Tel.317-325

Field of research: fundamental and applied general, sectorial and regional geographical research theory and methodological development of physical and economic geography, elaboration of new methods and their application, survey and evaluation of natural and economic resources in Hungary, investigations of relief and Quaternary sediments from geographical-engineering, geomorphological aspects, operative coordination of activities concerning the editing of the National Atlas of Hungary.

INSTITUTE OF MATHEMATICS
H-1053 Budapest, Reáltanoda u. 13-15., Tel. 173-151

Field of research: fundamental research in mathematics and its applications in diverse fields, mathematical logic and set theory, combinatorics and graph theory, complexity theory, mathematical foundation of computer science, theory of algebraic structures, model theory, elementary and analitic number theory, analysis with special emphasis on theory of differential equations, theory of real and complex functions, constructive analysis and approximation theory, some important topics in geometry and topology, probability theory, mathematical statistics, information theory, statistical physics, mathematical methods in operations research and control theory.

INSTITUTE OF NUCLEAR RESEARCH
H-4001 Debrecen, P.O.B.51., Tel.(52)17-266

Field of research: the fundamental research in the field of nuclear physics and of atomic shells, the application of physical experiences and methods in other sciences and in practice (industrial, agricultural, medical, etc.), development of instruments and methods for fundamental and applied research.

ISOTOPE RESEARCH INSTITUTE
H-1121 Budapest, Konkoly-Thege M. út 29-33., Tel.699-499

Field of research: the research and development in the field of isotope and clinical chemistry, physical chemistry, nuclear physics and engineering, radiation and health physics, radiation chemistry and technology, metrology and computer technology, industrial applications. Production of isotope preparates, radioactive and non-active clinical diagnostics and their kits. The institute is the governmental authority for the national accountancy of radioactive and fissionable materials. Trading with radioisotopes is carried out by IZINTA, a subsidiary of the institute.

NATURAL SCIENCE RESEARCH LABORATORIES
H-1112 BUDAPEST, BUDAÖRSI ÚT 45., TEL.850-777

The Institute is operating in the form of an interdisciplinary research center; directs activities in the field of material science and fundamental research for more efficient utilization of natural resources based on the specific fields of the constituent research laboratories. Special attention is paid to the problems of migration, concentration and transformation of the matter, besides, preparation of certain unusual forms of various materials, and revealing correlations between their functions and structure. A wide range interdisciplinary fundamental and applied research is an inherent characteristic of this center, originating from its organizational structure.

CRYSTAL PHYSICS RESEARCH LABORATORY
Field of research: the growth and complex study of optical single crystals, research on nonlinear optics.

GEOCHEMICAL RESEARCH LABORATORY
Field of research: the elucidation of complex geochemical-petrological processes related to the formation and utilization of some important exploitable mineral raw materials of Hungary, the theoretical study of the factors of concentration processes, the promotion of the possibilities of many-sided utilization of raw materials.

INORGANIC CHEMISTRY RESEARCH LABORATORY
Field of research: the investigation of inorganic solid state chemistry, research of inorganic polymers and macro-molecular systems of high complexity and high thermal stability, studies on electrode kinetics and corrosion of metals.

BIOPHYSICAL RESEARCH LABORATORY
H-1088 Budapest, Puskin u. 9., Tel.341-132

Field of research: the investigation of the structure-function relations in macromolecular systems of biological origin.

RESEARCH INSTITUTE FOR ASTRONOMY (Konkoly Observatory)
H-1121 Budapest, Konkoly-Thege M. u. 13-17., Tel.755-866

Field of research: the study of the properties of variable stars, investigation of the structure of our Galaxy and the physics of interstellar matter, search for and observation of supernovae, investigation of the upper-atmosphere by means of the notion of artifical satellites, study of solar activity, problems of sunspots and solar prominences.

RESEARCH INSTITUTE FOR TECHNICAL CHEMISTRY
H-8201 Veszprém, Schönherz Z. u. 2., Tel.(80)13-016

Field of research: basic and applied research in the field of technical chemistry and in the related fields of science and industry, investigation of technical chemical processes, operations and equipment using a systems theory approach.

RESEARCH INSTITUTE FOR TECHNICAL PHYSICS
H-1047 Budapest, Fóti út 56., Tel.692-100

Field of research: fundamental and applied research in physics, chemistry, materials sciences and technology concerning refractory metals, semiconductors, solid dielectrica and thin films in order to support the development of electronic components, advanced metallurgical products, microwave and optielectronical production, development of environment protecting technologies for recycling of valuable components from industrial wastes, R and D in illuminating engineering, postgraduate education, cooperation with various industrial enterprises in the development of products and processes as well as pilot production of advanced devices and materials, scientific contacts with foreign institutions, research in the framework of bilateral and multilateral agreements.

RESEARCH LABORATORY FOR MINING CHEMISTRY
H-3515 Miskolc-Egyetemváros P.O.B. 2. Tel.(46)67-211

Field of research: the development of new enhanced oil recovery methods and well treatment techniques, fundamental physico-chemical studies of fluidum and fluid-solid-gas systems relating to hydrocarbon recovery and exploitation of solid materials, mathematical simulation and laboratory modelling of processes in oil and gas production and in surface and underground mines.

SZEGED BIOLOGICAL RESEARCH CENTER (SZBK)
H-6701 Szeged, Odesszai krt. 62., Tel.(62)23-022

The Biological Research Center in Szeged, founded as a leading scientific institution in the field of molecular biology in Hungary, comprises five scientifically independent institutes.

INSTITUTE OF BIOCHEMISTRY
Field of research: biochemical studies of structure, function and expression of genes, transfer of genes and their expression in heterologous host cells, purification and characterization of receptors, role of lipids in biological membranes with a special emphasis on the frost-resistance in plants.

INSTITUTE OF BIOPHYSICS
Field of research: research in membrane bioenergetics, studies on neuronal plasticity, research in nucleotide chemistry.

INSTITUTE OF ENZYMOLOGY
H-1113 Budapest, Karolina út 29., Tel. 665-633

Field of research: the investigation of the structure and function of enzymes, enzyme systems and other biologically active proteins, study of the role of these proteins in complex biological processes (metabolic regulation, nervous system function, immune response, extracellular proteolysis).

INSTITUTE OF GENETICS
Field of research: studies of the mechanisms of heredity and of the processes regulating and influencing the manifestation of hereditary traits on molecular and various higher levels of organization.

INSTITUTE OF PLANT PHYSIOLOGY
Field of research: studies of gene expression in plants, research in photosynthesis on molecular and various higher levels of organization.

Medical sciences

INSTITUTE OF EXPERIMENTAL MEDICINE
H-1083 Budapest, Szigony u. 43., Tel. 331-970

Field of research: the study of the central regulation of activity of endocrine glands, the effect of hormones and its mode of action at various organizational levels, as well as neuropharmacological investigations, particularly those concerning cholinergic, adrenergic and opiatergic transmissions and their sensitivities to hormones.

Agricultural sciences

AGRICULTURAL RESEARCH INSTITUTE
H-2462 Martonvásár, P.O.B. 29., Tel.(26)45-744

Field of research: the study of the genetics and physiology of wheat and maize, the elaboration and application of new biotechnological methods; development of new wheat varieties and maize hybrids, their variety maintenance breeding, as well as the determination of their production-technology optima.

OECOLOGICAL AND BOTANICAL RESEARCH INSTITUTE
H-2163 Vácrátót, Alkotmány u. 2-4., Tel. (27)10-945

Field of research: the examination of oecoregulation, the taxonomy of Hungarian and tropical flora, gene preservation in the botanical garden, the structural and functional problems of vegetation dynamism and plant association, the genetic modificatory effects of environmental conditions, hydrobiological research of the change of state of the Hungarian part of the Danube.

RESEARCH INSTITUTE FOR PLANT PROTECTION
H-1022 Budapest, Hermann Ottó u. 15., Tel.564-691

Field of research the study of biology and controlling mechanism of the action of pathogens and insect pests, research on physiological plant pathology, plant disease resistance, resistance of pathogenic microorganisms to pesticides, weed biology and weed control, developing new pesticide molecules and adjuvants and research in the mechanism of action of the new compounds, research in order to develop new plant protection technologies that are environmentally safe.

RESEARCH INSTITUTE FOR SOIL SCIENCE AND AGRICULTURAL CHEMISTRY (RISSAC)
H-1022 Budapest, Hermann Ottó u.15.,Tel. 564-644

Field of research: the study of mass and energy transport and transformation processes in the soil and their control, modelling of nutrient regime of soils and nutrient uptake by plants, development of an up-to-date soil information system with the application of computer-techniques and remote-sensing, elaboration of scientific basis for rational energy-saving and environment-protecting, land use, amelioration, recultivation and agrotechnics.

RESEARCH INSTITUTE FOR VETERINARY MEDICINE
H-1143 Budapest, Hungária krt. 21., Tel.636-093

Field of research: research in viral, bacterial, mycoplasmal and parasitic diseases of domestic animals, study of the biochemical and other biological properties of the pathologenic agents, elucidation of the aetiology, pathogenesis and epizootilogy of the diseases, development and improvement of new diagnostic and control procedures.

Social sciences

ARCHAEOLOGICAL INSTITUTE
H-1014 Budapest, Uri u. 49., Tel. 759-011

Field of research: comprehensive study of different ages of Hungarian and universal archaeology with modern methods; development, application and distribution of interdisciplinary research methods and carrying out palaeoecological investigations in connection with them, organization and direction of preparation of the Archaeological Topography of Hungary.

CENTER FOR REGIONAL STUDIES
H-7621 Pécs, Kulich Gy. u. 22., Tel.(72)12-755

Field of research: basic social science research as regards regional development and transformation of the settlement system of the Hungarian society and economy, prediction of spatial processes expressing and influencing transformation,exploration and evaluation of regularities in order to have a better founded development in certain territories and regions.

ETHNOGRAPHICAL RESEARCH GROUP
H-1014 Budapest, Országház u. 30., Tel. 759-011

Field of research: coordinating the basic research in Hungarian ethnography, collecting and elaborating present and historical data relevant to ethnography, organizing and leading the modern synthesis of Hungarian ethnography, studying changes of traditional ways of life and culture during the 19th-20th centuries through case studies, analyzing social mobility in Hungary through life histories, interpreting the shaping image of Hungarian peasant culture, studying different topics of ethnography using up-to-date approaches.

INSTITUTE OF HISTORICAL RESEARCH
H-1014 Budapest, Uri u. 53., Tel.558-084

Field of research: the history of Hungary and Eastern Europe from the early Middle Ages up to contemporary history, during the following years special emphasis will be laid on researches into social history, on the preparation of Hungary's historical atlas and on the examination of Hungary's international relations, comprehensive works, as the ten-volume History of Hungary and a survey of Hungary's history in two volumes will also be completed the publication of numerous historical sources is also underway.

INSTITUTE FOR LEGAL AND ADMINISTRATIVE SCIENCES
H-1014 Budapest, Országház u. 30., Tel. 759-011

Field of research: the development of legal and administrative sciences, the theory of state and law, constitutional law of public administration, civil law, criminal law, international and comparative law, the examination and analysis of the state and law development of foreign countries.

INSTITUTE OF LITERARY STUDIES
H-1118 Budapest, Ménesi út 11-13.,Tel.451-156

Field of research: the history of Hungarian literature from its beginnings to the present, literary criticism with a view to influencing cultural policy and contemporary literature, the comparative study of Hungarian and other literatures, source publications on the history of Hungarian literature, the editing of reference books and bibliographies.

INSTITUTE FOR MUSICOLOGY
H-1014 Budapest, Táncsics M.u.7.,Tel.759-011

Field of research: world and Hungarian music history, folk music, folk dance, the coordination of studies in all other branches of musicology, the collection and

publication of the relics of Hungarian music, stewardship over the heritage of Hungary's great musicians.

INSTITUTE OF PHILOSOPHY
H-1054 Budapest, Szemere u. 10., Tel. 120-243

Field of research: the investigation of the fundamental problems of philosophy, team work on social philosophy, methodology and philosophy of science, history of classical and modern philosophy, history and theory of religion, the study of recent developments in world philosophy. An important task is to investigate, and publish texts from the history of Hungarian philosophy, especially the work of George Lukács.

INSTITUTE FOR PSYCHOLOGY
H-1068 Budapest, Szondy u. 83-85., Tel.319-162

Field of research: psychology, developing up-to-date experimental psychological methods, supporting the practical application of the results of basic research and those of psychological knowlege in resolving fundamental problems of society. Its most important lines of research cover the most recent fields of experimental and comparative psychology, psycho-physiology, social psychology, psychology of personality, developmental psychology and psychology of education. Its research projects include the research of social consciousness and style of living, problems of youngsters, deviational-social behavioral patterns, and public education.

INSTITUTE OF SOCIOLOGY
H-1014 Budapest, Uri u. 49., Tel. 759-011

Field of research: the investigation of the basic social processes shaping Hungarian society, further development of the theory and methodology of sociology.

RESEARCH INSTITUTE FOR ART HISTORY
H-1014 Budapest, Uri u. 62., Tel. 759-011

Field of research: the history of fine arts in Hungary from the beginnings to the present, theoretical and methodological studies, the coordination of the projected synthesis of the history of the arts in Hungary, the completion of the Topography of the Artistic Treasures of Hungary, the editing of the history of the Hungarian art criticism and art historiography, the publishing of source materials and texts about Hungarian art history, the bibliography of the Hungarian art history literature.

RESEARCH INSTITUTE FOR LINGUISTICS
H-1014 Budapest, Szentháromság u. 2., Tel.758-285

Field of research: diachronic and synchronic descriptions of Hungarian (i.e. the Dictionary of the Hungarian Language, Survey of Spoken Hungarian, the Historical Grammar of Hungarian etc.), diachronic and synchronic descriptions of the Uralic languages, theoretical linguistics, theory and practice of language cultivation, Hungarian and general phonetics, Hungarian applied linguistic studies.

Research Institutes for Economics of the Hungarian Academy of Sciences

INSTITUTE OF ECONOMICS
H-1112 Budapest, Budaörsi út 43-45.,Tel.850-777,853-774

Field of research: studies striving at clarifying the economic phenomena, processes and relationships connected with the socialist economic system, its functioning and development tendencies, in the interest of recognizing the economic regularities of socialist society and scientific foundation of economic-political decisions.

INSTITUTE FOR WORLD ECONOMICS
H-1124 Budapest, Kálló esperes u. 15., TEL.668-433

Field of research: the analysis of prognosis of the general, functional and sectoral problems of world economic development, with special regard to the interests of the Hungarian national economy.

RESEARCH INSTITUTE OF INDUSTRIAL AND COMPANY ECONOMICS
H-1112 Budapest, Budaörsi út 43-45., Tel.850-777

Field of research: research of general interest for the public in industrial and business economics, promotion of the development of and the relationship between scientific and practical work in industrial and business economy. The research projects of the institute concentrate on corporate activities and management as well as on sectoral and global industrial development and policy.

2. Other research units

THE LIBRARY OF THE HUNGARIAN ACADEMY OF SCIENCES
H-1361 Budapest, P.O.B. 7., Tel.382-344

The Library was founded by József Teleki, the first president of the Academy, who offered the Hungarian Learned Society his own library of 30,000 volumes in 1826 laying the foundations of the first scientific institution of the Academy by this act. Many other generous donations (present, purchase, exhange, copyright deposit) have enriched the library during the past 160 years, the current close to 1,700,000 items (930,000 books, 260,000 periodicals, 320,000 manucripts and 20,000 microfilms) making it one of the major information centers in Hungary. The institute as a national scientific research library collects all the works pertaining to ancient history, classical philology, linguistics, oriental studies and science policy. It also collects Marxist literature, the publications of other Academies, the works dealing with their scholarly activities, basis works in the natural sciences, and general works on methodology in the social sciences on the interdisciplinary approach and on the history of science.

The international exchange of books has always played an important part in the collecting activity of the library, it extends to about 1,600 scientific institutions in about 80 countries at present.

Besides modern Hungarian and foreign publications there is a periodicals collection of considerable tradition. The periodicals catalogue has 12,500 entries, 5,000 of them are current foreign periodicals.

Besides modern Hungarian and foreign publications, there are about 1,200 incunabula, 6,500 old Hungarian books printed before 1711 and other old, valuable works. The legacies of writers and scholars in the Manuscript Collection as well as the modern manuscript collections are invaluable sources for researchers.

The Oriental Collection with its rare codies and numerous manuscripts is internationally known. Of outstanding value are Dávid Kaufmann's Hebraic collection, the rare Turkish, Persian and Arabic manucripts of the Dániel Szilágyi, Sándor Kégl and Ármin Vámbéry collections, the Csoma de Kőrös Tibetan collection, the letters of Ignác Goldziher and the Inner-Asian legacy of Aurél Stein.

The Library is a vital part of the national system of scientific information. It has a key role in assessing and analyzing the accessibility of information to the social sciences today, and has been commissioned by the Academy to computerize the literature available in the natural sciences within the framework of the Science Citation Index of the Institute for Scientific Information (Philadelphia). As a representative of Hungary, the Library takes part in the joint enterprise of the academies of socialist countries called MISON (International Social Science Information System of the Socialist Countries) and also in the program of the European Cooperation in Social Science Information and Documentation helping the East-West exchange of information on social sciences. It also coordinates the expansion of information in the Hungarian libraires of social science libraries.

The Library is the center of the Academy's network of libraries. It regularly aids the libraries of the institutes in their work of systematization and organization, and supervises them. It also renders different services for the departmental libraries.

Besides their customary tasks, the librarians at the Academy Library carry on research work, which has resulted in a great many specialized studies on source materials and in the history of science, partly connected with the different research programs, partly with their own interest. Among others it is one of the international centers of scientometrical researches.

Connected with research work the Library has a publishing activity of its own, its publications mostly include sources, bibliographies, catalogues and works of interest to the history of science in different scientific serials (Publicationes Bibliothecae Academiae Scientiarum Hungaricae, Oriental Studies, Budapest Oriental Reprints, Informatics and Scientometrics, Research in Hungarian Cultural and Historical Past). The edition and publication of 5 periodicals Research-Development, ECSSID Bulletin, Bulletin of the Csoma de Kőrös Symposium, Analecta Linguistica, Scientometrics, 4 of them being international periodicals, also belong to the domain of the Library.

INSTITUTE FOR RESEARCH ORGANIZATION OF THE HUNGARIAN ACADEMY OF SCIENCES
H-1051 Budapest, Münnich F. u. 18., Tel. 313-161

The Institute's main responsibilities include the collection and processing of all information necessary for the preparation of preliminary documents and other relevant material that may serve as a basis for decisions to be taken by the leaders of the Academy concerning the coordination and orientation of research efforts within the Academy's competence; it also presents analyses and prognoses to this end; conducts researches, theoretical and practical, in the broad fields of science policy and research organization, and the science of science. Acting as part of the Institute is the Office of Academy-Supported Research Units.

3. University affiliated and other research units supported by the Academy (MTA)
(as on January 1, 1988)

At the Eötvös Loránd University (ELTE, Budapest)

ELTE Általános és Szervetlen Kémiai Tanszék
(Chair of General and Inorganic Chemistry)
1088 Budapest, Múzeum krt. 6-8.

ELTE Kémiai Technológiai Tanszék
(Chair of Chemical Technology)
1088 Budapest, Múzeum krt. 6-8.

MTA Peptidkémiai Tanszéki Kutatócsoport
(Research Group for Peptide Chemistry)
1088 Budapest, Múzeum krt. 4/b

MTA Geofizikai Tanszéki Kutatócsoport
(Research Group for Geophysics)
1083 Budapest, Kun Béla tér 2.

MTA Talajzoológiai Tanszéki Kutatócsoport
(Research Group for Soil Zoology)
1088 Budapest, Puskin u. 3.

MTA Ökológiai Modellező Tanszéki Kutatócsoport
(Research Group for Ecological Modelling)
1083 Budapest, Kun Béla tér 2.

MTA Pszichofiziológiai Tanszéki Kutatócsoport
(Research Group for Psychophysiology)
1088 Budapest, Múzeum krt. 4/a

MTA Geológiai Tanszéki Kutatócsoport
(Research Group for Geology)
1088 Budapest, Múzeum krt. 4/a

MTA Szerkezeti Kémiai Tanszéki Kutatócsoport
(Research Group for Structural Chemistry)
1088 Budapest, Puskin u. 11-13.

ELTE Meteorológiai Tanszék
(Chair of Meteorology)
1083 Budapest, Kun Béla tér 2.

ELTE Történeti Tanszékek Könyvtára
(Library of the Historical Chairs)
1052 Budapest, Pesti Barnabás u. 1.

ELTE Régészeti Tanszék
(Chair of Archaeology)
1052 Budapest, Pesti Barnabás u. 1.

MTA Altajisztikai Tanszéki Kutatócsoport
(Research Group for Altaic Studies)
1064 Budapest, Izabella u. 46.

ELTE Magyar Nyelvtörténeti és Nyelvjárástani Tanszék
(Chair of Hungarian Linguistic History and Dialectology)
1052 Budapest, Pesti Barnabás u. 1.

ELTE Régi Magyar Irodalomtörténeti Tanszék
(Chair of Old Hungarian Literary History)
1052 Budapest, Pesti Barnabás u. 1.

ELTE XIX. sz. Magyar Irodalomtörténeti Tanszék
(Chair of the 19th Century Hungarian Literary History)
1052 Budapest, Pesti Barnabás u. 1.

ELTE XX. sz. Magyar Irodalomtörténeti Tanszék
(Chair of the 20th Century Hungarian Literary History)
1052 Budapest Pesti Barnabás u. 1.

ELTE Latin Nyelv és Irodalom Tanszék
(Chair of the Latin Language and Literature)
1052 Budapest, Pesti Barnabás u. 1.

MTA Ókortudományi Tanszéki Kutatócsoport
(Research Group for Ancient History)
1052 Budapest Pesti Barnabás u. 1.

ELTE Német Nyelv és Irodalom Tanszék
(Chair of the German Language and Literature)
1052 Budapest Pesti Barnabás u. 1.

ELTE Művelődéstörténeti Tanszék
(Chair of Cultural History)
1052 Budapest Pesti Barnabás u. 1.

MTA Judaisztikai Kutatócsoport
(Center for Studies in Judaism)
1118 Budapest, Ménesi út 11-13.

ELTE Magyar Állam és Jogtörténeti Tanszék
(Chair of the History of the Hungarian State and Law)
1053 Budapest, Egyetem tér 1-3.

ELTE Jogszociológiai Tanszék
(Chair for the Sociology of Law)
1053 Budapest, Egyetem tér 1-3.

At the Attila József University (JATE Szeged)

MTA Automataelméleti Tanszéki Kutatócsoport
(Research Group for Automation)
6720 Szeged, Somogyi Béla út 7.)

MTA Lézerfizikai Tanszéki Kutatócsoport
(Research Group for Laser Physics)
6720 Szeged, Dóm tér 9.

MTA Reakciókinetikai Tanszéki Kutatócsoport
(Research Group for Reaction Kinetics)
6720 Szeged, Aradi vértanuk tere 1.

MTA Növénytani Tanszéki Kutatócsoport
(Research Group for Botany)
6722 Szeged, Egyetem u. 2/b

JATE Néprajzi Tanszék
(Chair of Ethnography)
6722 Szeged, Egyetem u. 2.

At the Lajos Kossuth University (KLTE, Debrecen)

MTA Antibiotikumkémiai Tanszéki Kutatócsoport
(Research Group for Antibiotic Chemistry)
4032 Debrecen, Egyetem tér 1.

KLTE Magyar Nyelvtudományi Tanszék
(Chair of Hungarian Linguistics)
4032 Debrecen, Egyetem tér 1.

KLTE Néprajzi Tanszék
(Chair at Ethnography)
4032 Debrecen, Egyetem tér 1.

KLTE 19.sz.Magyar Irodalmi Tanszék
(Chair of the 19th Century Hungarian Literature)
4032 Debrecen, Egyetem tér 1.

KLTE Régi Magyar Irodalmi Tanszék
(Chair of the Old Hungarian Literature)
4032 Debrecen, Egyetem tér 1.

At the Karl Marx University of Economic Science (MKKE, Budapest)

MKKE Népgazdasági Tervezési Intézet
(Institute of Economic Planning)
1093 Budapest, Dimitrov tér 8.

MKKE Világgazdasági Tanszék
(Chair of World Economy)
1093 Budapest, Kinizsi u. 1-7.

MKKE Gazdaságtörténeti Tanszék
(Chair of Economic History)
1093 Budapest, Dimitrov tér 8.

MKKE Gazdasági Jogi Tanszék
(Chair of Economic Law)
1093 Budapest, Dimitrov tér 8.

MKKE Nemzetközi Kapcsolatok Tanszék
(Chair of International Relations)
1093 Budapest, Dimitrov tér 8.

MKKE Közép- és Kelet-európai Akadémiai Kutatóközpont
(Central and Eastern European Studies Centre)
1093 Budapest, Dimitrov tér 8.

MKKE Vállalatgazdasági Kutatócsoport
(Research Group for Enterprisal Economics)
1053 Budapest, Veres Pálné u. 36.

At the Technical University of Budapest (BME, Budapest)

MTA Műszaki Mechanikai Tanszéki Kutatócsoport
(Research Group for Technical Mechanics)
1111 Budapest, Műegyetem rkp. 3.

MTA Fémtechnológiai Tanszéki Kutatócsoport
(Research Group for Metal Technology)
1111 Budapest, Goldmann György tér 3.

MTA Alkaloidkémiai Tanszéki Kutatócsoport
(Research Group for Alkaloid Chemistry)
1111 Budapest, Gellért tér 4.

MTA Informatikai és Elektronikai Tanszéki Kutatócsoport
(Research Group for Information Theory and Electronics)
1111 Budapest, Stoczek u. 2.

MTA Műszaki Analítikai Kémiai Tanszéki Kutatócsoport
(Research Group for Analytic Chemistry)
1111 Budapest, Gellért tér 4.

MTA Szerves Kémiai Technológiai Tanszéki Kutatócsoport
(Research Group for Organic Chemical Technology)
1111 Budapest, Budafoki út 4.

MTA Kutatás-fejlesztési Tanszéki Kutatócsoport
(Research Group for Research and Development Studies)
1111 Budapest, Műegyetem rkp. 3.

At the Technical University of Heavy Industry (NME, Miskolc)

NME Bányaműveléstani Tanszék
(Chair of Mine Exploitation)
3515 Miskolc-Egyetemváros

NME Mechanikai Tanszék
(Chair of Mechanics)
3515 Miskolc-Egyetemváros

At the Veszprém University of Heavy Industry (Veszprém)

MTA Vegyipari Analítikai Kémiai Tanszéki Kutatócsoport
(Research Group for Industrial Analytic Chemistry)
8200 Veszprém, Schönherz Z. u. 12.

MTA Petrolkémiai Tanszéki Kutatócsoport
(Research Group for Petrochemistry)
8200 Veszprém, Schönherz Z. u. 12.

At the Semmelweis University of Medicine (SOTE, Budapest)

MTA-SOTE Egyesített Kutatási Szervezet
(Hungarian Academy of Sciences - Semmelweis University Medicine Joint Research Organization)
1082 Budapest, Üllői út 78/a

SOTE Élettani Intézet
(Institute of Physiology)
1088 Budapest, Puskin u. 9.

SOTE I. Gyermekgyógyászati Klinika
(Pediatric Clinic No.1)
1083 Budapest, Bókay János u. 56.

At the Debrecen University of Medicine (DOTE, Debrecen)

DOTE Biológiai Intézet
(Institute of Biology)
4032 Debrecen, Nagyerdei krt. 98.

DOTE Kórélettani Intézet
(Institute of Pathophysiology)
4032 Debrecen, Nagyerdei krt. 98.

At the Medical University of Pécs (POTE, Pécs)

MTA Biofizikai Tanszéki Kutatócsoport
(Research Group for Biophysics)
7643 Pécs, Sziget u. 12.

POTE Anatomiai Intézet
(Institute of Anatomy)
7643 Pécs, Sziget u. 13.

MTA Idegélettani Tanszéki Kutatócsoport
(Research Group for Neurophysiology)
7643 Pécs, Sziget u. 12.

At the Szent-Györgyi University of Medical Sciences in Szeged (SZOTE, Szeged)

SZOTE I. Belgyógyászati Klinika
(Medical Clinic No.1)
6720 Szeged, Korányi rkp. 8.

SZOTE Mikrobiológiai Intézet
(Institute of Microbiology)
6725 Szeged, Dóm tér 10.

At the University of Agricultural Sciences (GATE, Gödöllő)

GATE Öntözési Munkaközösség
(Task Force for Irrigation)
2100 Gödöllő, Nyisztor tér 1.

At the University of Horticulture and Food Industry (KÉE, Budapest)

KÉE Növényörökléstani és Nemesítési Intézet
(Institute of Plant Breeding and Genetics)
1118 Budapest, Ménesi út 44.

KÉE Zöldségtermesztési Intézet
(Institute of Olericulture)
1118 Budapest, Ménesi út 44.

At the University of Veterinary Science (ÁOTE, Budapest)

ÁOTE Járványtani Tanszék
(Chair of Epidemology)
1143 Budapest, Hungária krt. 23-25.

ÁOTE Állathigiéniai Tanszék
(Chair of Animal Hygiene)
1078 Budapest, Landler Jenő u. 2.

At the University of Forestry and Wood Science (EFE, Sopron)

EFE Termőhelyismerettani Tanszék
(Chair of Plant Habitat)
9400 Bajcsy-Zsilinszky út 4.

Not University-related institutions

Magyar Országos Levéltár
(Hungarian National Archives)
1014 Budapest, Bécsi kapu tér 2-4.

Magyar Nemzeti Múzeum
(Hungarian National Museum)
1088 Budapest, Múzeum krt. 14-16.

Természettudományi Múzeum
(Hungarian Natural History Museum)
1088 Budapest, Baross u. 13.

Szépművészeti Múzeum
(Museum of Fine Arts)
1134 Budapest, Dózsa György út 41.

Országos Műemléki Felügyelőség
(National Inspectorale of Historical and Art Monuments)
1014 Budapest, Dísz tér 4-5.

KSH Népességtudományi Kutató Intézet
(Research Institute of Demography of the Hungarian Central Statistical Office)
1053 Budapest, Veres Pálné u. 10.

4. The Academy's centres in country-towns

MTA Debreceni Akadémiai Központ
(Hungarian Academy of Sciences /H.A.S./ Centre in Debrecen)
4032 Debrecen, Bólyai u. 27.

MTA Miskolci Akadémiai Központ
(H.A.S. Centre in Miskolc)
3515 Miskolc, Szabadság tér 3.

MTA Pécsi Akadémiai Központ
(H.A.S. Centre in Pécs)
7624 pécs, Jurisics M. u. 44.

MTA Szegedi Akadémiai Központ
(H.A.S. Centre in Szeged)
6720 Szeged. Somogyi B.u. 7.

MTA Veszprémi Akadémiai Központ
(H.A.S. Centre in Veszprém)
8200 Veszprém, Schönherz Z. u. 10.