

ANNUAL REPORT



**PAKISTAN
SCIENCE
FOUNDATION**

1991-92

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**PAKISTAN SCIENCE FOUNDATION
ISLAMABAD**

PAKISTAN SCIENCE FOUNDATION

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ABBREVIATIONS

Province

B	Balochistan
C	Centre
F	Frontier
P	Punjab
S	Sindh

Sponsoring institutions

AC	Agricultural College
AU	Agricultural University
ED	Engineering University
QU	Quaid-i-Azam University
KU	Karachi University
HG	Government College, Hairpur
PU	Peshawar University/Punjab University
SU	Sind University
KMC	Khyber Medical College
NHL	National Health Laboratories
CSIR	Council of Scientific and Industrial Research
JPMC	Jinnah Post-Graduate Medical Centre
NIAB	Nuclear Institute for Agriculture & Biology

Disciplines

AGR	Agricultural Sciences
BIO	Biological Sciences
ENG	Engineering Sciences
MED	Medical Sciences
PHY	Physical Sciences
CHEM	Chemical Sciences
MATH	Mathematical Sciences
EARTH	Earth Sciences
OCEANG	Oceano-graphic Sciences
ENVR	Environmental Sciences

EXECUTIVE SUMMARY

PAKISTAN SCIENCE FOUNDATION (PSF)

Pakistan Science Foundation is an apex body for promotion and funding of scientific and technological activities in the country. The activities undertaken by the Foundation for the performance of its statutory functions are divided into three broad categories:

- i) To promote basic and fundamental research in universities and research institutes on scientific problems related to socio-economic needs/development of the country.
- ii) To increase public awareness about science through science promotion activities by establishing museums, clubs, herbaria and planetaria etc.
- iii) To establish centres for comprehensive scientific and technological information systems.

The activities of the Foundation revolve around these objectives. The first function is carried out by the Science Wing of PSF while the second one is achieved through Science Promotion Section of PSF and Pakistan Museum of Natural History (PMNH) and the third through Pakistan Scientific and Technological Information Center (PASTIC). The activities during the year are reflected below.

RESEARCH SUPPORT:

Research Support is the principal programme of the Foundation for the promotion of basic and fundamental research relevant to the socio-economic needs of the country. The program is mainly carried out through (a) grants for research projects submitted by individuals or groups of scientists in the universities/research organizations (b) financial support to build institutional capabilities for undertaking research through the provision of equipment and literature, etc.

During the period under report 122 projects were under active consideration for funding, among these, 71 were new projects whereas 51 were carried over from the previous year. Out of these, 26 projects in the fields of Agriculture, Biology, Chemistry, Medicine and Physics were sanctioned at an estimated cost of Rs. 5.197 million.

For evaluation of on-going projects, 33 semi-annual and annual reports were received and evaluated and an amount of Rs. 2.415 million was released as research grant installments of various on going projects. During the period under report, the following six studies/projects were completed.

- Amphibians and reptiles of Potwar.
- Natural resources in Thal and Cholistan sand dunes.
- Probosidian and reptilian fossil fauna from Siwaliks.
- Application of enzymes in "Flow injection analysis".
- Multifunction of dihydrofolate reductase.
- Plasma/fusion physics.

Moreover, seven (7) institutions were granted a total sum of about Rs. 0.295 million as institutional support grant for their strengthening. Grants amounting to Rs. 0.880 million were also given to various scientific societies/learned bodies for publication of scientific journals and holding conferences/seminars etc. Support was also extended to three scientists as travel grants and two M. Phil students as fellowship. Travel grants amounting to Rs. 0.072 million were provided to three scientists for their study visits abroad.

Under International Liaison, Dr. N. K. Jones from Lancaster University, UK, visited Pakistan while a delegation of Pakistani geologists visited China.

SCIENCE POPULARIZATION

For the promotion of science, a number of activities were organised and/or sponsored. These include summer school in science for talented school children, scientific and cultural exhibition in Kashmir, four(4) popular science lectures on different topics by various eminent scientists, and number of science film and planetarium shows. Eleven, 16mm science films were purchased and converted into VHS format with Urdu commentaries.

Science Clubs Programme is an on-going activity of the Foundation. Under this programme, science clubs of 234 schools have been enrolled and various booklets, small grants, one solar cooker each have been sent out to them. Donations of scientific books and magazines were also given to schools in all provinces, FATA, FANA, and AJK.

During the year, the Foundation launched a quarterly "Science Bulletin" based on scientific news and views. A science essay competition at university level was organised on "Science and Technology for Self-Reliance" during the year.

Science posters for schools is one of the main science promotion activities of the Foundation. During the year, 10 posters on various scientific themes were prepared and printed for distribution to schools. Fourth Intra and Inter-Board science poster contests and science essay competition were organised and the prizes were awarded to the best three posters and essays.

Similarly, Science Caravan is another important science promotion activity of PSF. So far, there are three caravan units, i.e; Federal/North Punjab, NWFP and Sindh. These units

continued their exhibitions and demonstrations in schools of their respective areas in coordination with Boards/Directorates of education and schools. The caravan units for Balochistan and Punjab could not be launched due to the government ban on recruitment.

PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

During this report period both research and display activities of PMNH continued at a fairly rapid pace. The scientists remained busy to collect, preserve and identify natural history specimens from diverse localities of Pakistan so as to build a reference collection of plants, animals, rocks, minerals and fossils found in our country.

One of the objectives of PMNH is to establish liaison with similar institutions both within Pakistan and abroad. Two active joint research projects that remained under implementation were "Cryptogamic Expedition 1990-92" with Kyoto University and Natural History Museum, Tokyo, Japan and "Herpetology of Pakistan" with Florida State University, USA. Both projects are envisaged to lead to the publication of books in the respective fields.

Among the main achievements of the public services division was the implementation of the renovation scheme for Display Corner at Marghazar. Many new exhibits were added here alongwith the display of "Hiroshima Stone" donated by the Japanese Government as a token of friendship.

Many foreign scientists/teams from Japan, UK, USA and Italy remained engaged in consultative meetings with PMNH and PSF, while PMNH scientists including Director, Botanical Sciences Division and Incharge, Zoological Sciences Division visited Japan and UK to assist in the compilation of book and to learn latest techniques regarding preservation, curation, exhibit planning and execution, etc. During the year a total of 17 research papers on natural history materials were published.

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

PASTIC with its National Centre at Islamabad and four sub-centers at Karachi, Quetta, Lahore and Peshawar continued providing various services to S&T scientists and organisations in the country. The services included document procurement, supply, patent information, bibliographies, microfiches, translations, current contents, technology information and reprographic services.

In addition PASTIC undertook 103 printing jobs for various organisations including Ministry of Science and Technology, Govt. of Pakistan.

A training course on DBASE3+, CDS/ISIS, MSTAT and SLIDE WRITE was conducted during December 1991 for PMNH scientists. A workshop on CEHANET procedure was also organised in Lahore in February, 1992.

Technological Information Promotion System (TIPS) based at PASTIC has been regularly publishing daily and weekly bulletins in Pakistan which provide up-to-the-minute and detailed information on technology and trade opportunities. It covers fourteen different sectors and has the largest database in the world on trade/technology information from the developing countries. These sectors are :

- | | |
|---------------------------|------------------------|
| i) Agro-Industries | viii) Biotechnology |
| ii) Energy | ix) Textiles |
| iii) Electronics | x) Fisheries |
| iv) Pharmaceuticals | xi) Building Materials |
| v) Business Opportunities | xii) Chemicals |
| vi) Food Processing | xiii) Mining |
| vii) Machinery | xiv) Packaging |

During 1991-92, 1850 technology/trade offers and requests came from 13 countries and were sent to 400 users in Pakistan. Pakistani entrepreneurs/business organisations submitted information on 800 products/processes/technologies which were advertised abroad through TIPS network.

INTRODUCTION

The Pakistan Science Foundation was established on 30th June, 1973, under the Pakistan Science Foundation Act No. III of 1973 (Annexure-I) as an autonomous body to promote and finance scientific and technological activities having a bearing on the socio-economic needs of the country. Under the Act, the Foundation has been entrusted to carry out the following functions:-

- i. establishment of comprehensive scientific and technological information and dissemination centers;
- ii. promotion of basic and fundamental research in universities and other institutions on scientific problems relevant to the socio-economic development of the country.
- iii. utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale;
- iv. establishment of science centres, clubs, museums, herbaria and planetaria;
- v. Promotion of scientific societies, associations, and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular;
- vi. organization of periodical science conferences, symposia and seminars;
- vii. exchange of visits of scientists and technologists with other countries;
- viii. grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the economy of the country; and
- ix. special scientific surveys not undertaken by any other organization and collection of scientific statistics related to the scientific efforts of the country.

The Foundation shall also:-

- i. review the progress of scientific research sponsored by it and evaluate the results of such research;
- ii. maintain a National Register of highly qualified and talented scientists/engineers and doctors both in and outside Pakistan, and to assist them in collaboration with concerned agencies to seek appropriate employment; and
- iii. establish liaison with similar bodies in other countries.
- iv. The activities performed under the above mentioned statutory functions are given in the chapters that follow.

CHAPTER- 1

ACTIVITIES & PROGRAMMES

The Activities and programmes undertaken by the Foundation for the performance of its statutory functions can be broadly divided into four categories:-

- i. Establish comprehensive scientific & technological information & dissemination centres.
- ii. Promote & finance scientific research in the country and the utilization of the research results.
- iii. Promote and popularize science in society.
- iv. International Liaison.

The first activity is carried out through Pakistan Scientific and Technological Information Centre (PASTIC), a subsidiary organization of PSF. The other functions, i.e., research support, science popularization, etc. are performed by the Science Section of the Foundation, which is divided into two sub sections as under:-

A. RESEARCH SUPPORT SECTION

The section performs the following functions;

1. Research Support:
 - a) Grants for Research Projects
 - b) Institutional Support
2. Research Evaluation
3. Scientific Societies/Learned Bodies
4. Exchange Of Visits
5. Awards and Fellowship
6. International Liaison
7. Other Activities

B. SCIENCE POPULARIZATION SECTION

The section undertakes the following;

1. Funding for Conferences/Seminars/Symposia
2. Science Fairs/Exhibitions
3. Popular Science Lectures

4. Science Film/Planetarium Shows
6. PSF Science Bulletin
7. Science Essay Competition At University Level
8. Science Posters Project
9. Inter Board Science Poster Contest
10. Intra Board Science Essay Competition
11. Science Caravan Project
12. Science Clubs Programme

A second subsidiary organization of Pakistan Science Foundation is the Pakistan Museum of Natural History (PMNH) established in 1979 to serve the national needs in the vitally important areas of research, conservation & education involving Pakistan's heritage of natural resources. The Museum is a national repository for permanent storage of plants, animals, rocks, minerals, & fossils of the country.

The progress of the work carried out by the science sections of the Foundation, PASTIC & PMNH during the year 1991-92 is summarized in the following pages.

PAKISTAN SCIENCE FOUNDATION (PSF)

The progress of the work done by the Foundation during the year. 1991,92 under various statutory functions entrusted to it, is summarised below:

A. RESEARCH SUPPORT SECTION

The progress of the workdone by the research support section during the year, 1991 -92 under various statutory functions entrusted to it, it is submitted below:

1. RESEARCH SUPPORT

The promotion of basic and fundamental research in universities and other institutions on scientific problems relevant to the socio-economic development of country is the important function of PSF.

The Foundation carried out its statutory responsibility for the support of scientific research through following programmes:-

- i) Grants for research projects submitted by individuals or groups of scientists in the universities & research institutions in the country..
- ii) Institutional support- provision of equipment, literature, staff training facilities, etc., to build institutional capability for conducting research.
- iii) Support for participation in regional and international research programmes.

a) Grants for Research Projects

Research support is the principal programme of the Foundation for the promotion of basic and fundamental research, having relevance to the socio-economic needs of the country. During the period under report, 71 new projects were received by the Foundation, whereas 51 project proposals were carried over from the previous year. Thus, in all, 122 proposals remained under active consideration of the foundation during the period 1991-92. The proposals were examined by the experts in relevent fields in the light of their scientific merit and according to the criteria laid down by the Foundation. The criteria for research are: (a) competence of the scientific personnel to carry out the research; (b) institutional capability i.e. availability of requisite equipment, laboratory and literature facilities. (c) scientific merit of the proposed research; and (d) likelihood of completion of the project within the stipulated time. Each proposal after receipt of the initial review report, is placed before the relevant Technical Committee for technical evaluation and Executive Committee of the Foundation for final sanction.

During the report period (26) projects were sanctioned at an estimated cost of Rs.5.197 million. Their 1st installments amounting to Rs.2.233 million were released for the initiation of projects work as detailed below:

Title of Schemes:	Name of P.I. & Organisation	Project Cost:
<u>AGRICULTURAL SCIENCES:</u>		
Incidence and seroprevalence of various infectious bronchitis virus strains in chickens, P-VC/Agr(100)	Dr. M. Akram Muneer, Assitant Professor, Deptt: of Microbiology, College of Veterinary Sciences, Lahore.	Rs. 1,51,280/-
Studies on the improvement of physio-chemical characteristics of soils through legume crops in Dera Ismail Khan.-GU/Agr(113)	Dr. Muhammad Qasim Khan, Associate Professor, Deptt: of Soil Sciences, Faculty of Agriculture, Gomal University, D.I.Khan	Rs. 1,12,581/-
Development of normal and therapeutic diet sheet for Pakistani population. F-AU/Agr(114)	Prof. Dr. Tajammal Hussain, Chairman, Deptt: of Agriculture Chemistry and Human Nutrition, NWFP Agriculture University, Peshawar	Rs. 64,335/-
Growth pattern and nutritional status of infants and toddlers in North West Ffrontier Province Pakistan. P-PU/Agr (115)	Dr. Pervez Iqbal Paracha, Assistant Professor, Deptt: of Agriculture Chemistry and Human Nutrition, NWFP Agriculture University, Peshawar.	Rs. 36,364/-
Evolution of early maturing cotton varieties suitable for Dera Ismail Khan zone. F-GU/Agr (116)	Dr. Muhammad Ayub, Faculty of Agriculture, Gomal University, Dera Ismail Khan.	Rs. 61,690/-
Studies on the aetiology and pathology of calf mortality in buffalo and cow neonates. P-AU/Agr (118)	Prof. Dr. M. Zaman Khan, Deptt: of Veterinary Pathology, University of Agriculture, Faisalabad.	Rs. 60,310/-
Modelling the yield potential and N, fertilizer requirements of wheat using soil and weather data for irrigated and dryland areas of NWFP. F-AU/Agr (120)	Dr. Aman Ullah Bhatti, Deptt: of Soil Science, NWFP Agriculture University, Peshawar.	Rs. 1,16,895/-

Effect of various doses of potash with and without boron on the yield and quality of sugarbeet in Peshawar valley. F-AU/Agr (122)	Dr. Sajida Perveen, Assistant Professor, Deptt: of Soil Science, NWFP Agriculture University, Peshawar	Rs. 77,575/-
Studies on adoptability patterns for short duration wheat under environmental dynamics. F-AU/Agr (123)	Prof. Dr. Khan Zada, Deptt: of Agronomy, NWFP Agriculture University, Peshawar	Rs. 1,07,585/-
Compendium of seed-borne fungi of oil seed crops. S-KU/Agr(125)	Dr. Masoodul Hasan Hashmi, Associate Prof. Deptt: of Botany, University of Karachi, Karachi.	Rs. 41,695/-

BIOLOGICAL SCIENCES:

Transformation studies of rice (oryza sativa)P-PU/Bio (187)	Dr. Tayyab Husnain, Assistant Professor, Centre for Molecular Biology, University of Punjab, Quaid-i-Azam Campus, Lahore.	Rs. 1,27,370/-
Role of follicle-stimulating hormone (FSH) on gonadal function in the immature monkey: specified and synergistic effects. C-QU/Bio (192)	Dr. M. Arslan, Professor, Deptt: of Biological Sciences, Quaid-i-Azam University, Islamabad.	Rs. 99,260/-
Studies on mass production of biocontrol agents for application and plant diseases control S-KU/Bio (194)	Dr. A. Ghaffar, Professor/Chairman, Deptt: of Botany, University of Karachi, Karachi.	Rs. 79,390/-
Combined effect of VAM fungi and rhizobium for increasing growth and yield soybean. S-KU/Bio (200)	Prof. Dr. M. Jalaluddin, Deptt: of Botany, University of Karachi, Karachi.	Rs. 67,590/-
Ecophysiology of indus delta mangroves. S-KU/Bio (201)	Dr. M. Ajmal Khan, Associate Professor, Department of Botany University of Karachi, Karachi.	Rs. 1,93,137/-

CHEMICAL SCIENCES:

Production of mycelial protein from cellulosic biomass as substrate for poultry feed. S-SU/Chem (184)	Mohammad Umar Dahot, Lecturer of Bio-Chemistry, University of Sindh, Jamshoro.	Rs. 55,436/-
Effects of municipal sewerage and industrial effluents on the quality of phulleli canal water. S-SU/Chem (200)	Dr. Iqbal Ahmed Ansari, Institute of Chemistry, University of Sindh, Jamshoro.	Rs. 71,970/-
Evaluation of trace elements and aerosols in air and their effect on urban environment of Punjab area in Pakistan, P-PU/Chem(208)	Dr. M. Zafar Iqbal, Prof. & Director, Institute of Chemistry, Punjab University, Lahore.	Rs. 36,599/-
Process development for the manufacture of 6-Amino penicillanic acid (6-APA) from penicillin G. P-CSISR/Chem (219)	Dr. M.A. Qadeer, Chief Scientific Officer, Bio-technology section, Biotechnology & Food Research Centre, PCSIR, Laboratories Complex, Lahore.	Rs. 72,560/-
Biotechnological potential of immobilized enzymes: applications of immobilized enzymes in the synthesis of valuable biological compounds. B-BU/Chem (211)	Dr. Muhammad Masoom, Assistant Professor, Institute of Bio-Chemistry, University of Baluchistan, Quetta.	Rs. 1,66,545/-

MEDICAL SCIENCES

Compensatory renal hypertrophy following unilateral nephrectomy in albino rats at low and high altitude. P-PMI/Med (142)	Prof. Farakh A. Khan, Professor of Urology, Postgraduate Medical Institute, 6-Birdwood Road, Lahore.	Rs. 25,00/-
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Effect of periodic massive dose of vitamin-A on improving the iron status of anemic children of low socio-economic status of Karachi. S-JPMC/Med (143)	Dr. Abdul Baseer, Chairman, Biochemistry Division, Jinnah Postgraduate Medical Centre, Karachi-35.	Rs. 29,000/-
Experimental model studies of idiopathic portal hypertension (IPH). S-JPMC/Med (144)	Prof. Syed Mahmood Alam, Head, Deptt: of Pathology, JPMC., Karachi.	Rs. 35,000/-
Predictive and discriminative relations of lipids and lipoproteins with angiographically assessed coronary artery disease. S-JPMC/Med (145)	Prof. Dr. Abdul Baseer, Chairman, Deptt: of Biochemistry, JPMC, Karachi.	Rs. 24,000/-

PHYSICAL SCIENCES

Dielectric spectroscopy of semi-conductors. C-QU/Phys (76)	Dr. M. Aslam Beg, Associate Professor, Deptt: of Physics, Quaid-i-Azam University, Islamabad	Rs. 66,120/-
Characterization, modelling and simulation of semi-conductor/super conductor device. C-QU/Phys (79)	Dr. Ghulam Sarwar Bhatti, Assistant Professor, Deptt: of Electronics, Quaid-i-Azam University, Islamabad.	Rs. 2,53,725/-

b) Institutional Support

An amount of Rs. 2,94,900/- was released to the following seven (7) Institutes of the Universities, Departments and colleges on account of "Institutional Support Grant" for the purpose mentioned against each:

Name of Institute/Department	Purpose of Grant:	Amount
-Department of Soil Science, NWFP Agriculture University, Peshawar	Purchase of spare parts for computer.	Rs. 30,000/-
-Department of Botany, University of Punjab, Lahore.	Purchase of spectrophotometer.	Rs. 1,00,000/-

-Department of Chemistry, University of Azad Jammu & Kashmir, Muzaffarabad.	Purchase of an accessory for UV visible spectrophotometer.	Rs. 25,000/-
-Institute of Chemistry, University of Punjab, Lahore.	Purchase of Laboratory Equipments.	Rs. 44,000/-
-Earth Sciences Division, Pakistan Museum of Natural History, Islamabad.	Purchase of Scientific Literature.	RS. 23,900/-
-Department of Physiology, University of Sindh, Jamshoro.	Purchase of accessories (Lamps) for atomic absorption spectrophotometer.	Rs. 50,000/-
-National Centre for Technology Transfer(NCTT).	Partial financial assistance.	Rs. 22,000/-

2. RESEARCH EVALUATION

The Technical/Fiscal Reports received during the report period were evaluated as per procedure laid down by the Foundation for reviewing the progress of PSF Supported Research Projects. The details of these projects are as under:-

a) On-Going Projects

i) **Semi-Annual Reports:**

Twenty (20) semi-annual reports, received after the initiation of each project or after the submission of the annual reports, were scrutinized by the research support section to assess the interim progress of these projects and to release their next due instalments. The particulars of these reports are as under:-

Project No:	Project Title:	Reports:
P-CSIR/Agr (95)	A survey of toxigenic fungi in agricultural commodities.	2nd semi- annual
S-AU/Agr (106)	Isolation & typing of various strain of streptococcus thermophilous and lactobacillus bulgaricus, from local dahi samples and their effects on various physio-chemical properties of milk during fermentation.	1st Semi-annual

S-KU/Bio (161)	Survey and determination of resistance in mosquitoes and houseflies of Karachi region.	2nd semi-annual
S-KU/Bio (170)	Plasmids of gram positive cocci as tools for genetic engineering.	1st semi-annual
P-PU/Bio(172)	Termites of desert zones of Pakistan.	1st semi-annual
P-PU/Bio (174)	Teratogenicity and embryotoxicity of two commonly used insecticides in mice.	1st semi-annual and 2nd semi-annual
P-BZU/Bio (176)	Study of the effect of seasonal variation on the energetics of the body composition and energy budget parameters of the culturable fish varieties of Multan Division.	1st semi-annual
AJK/UCR/Bio (178)	Exploratory survey of nodulated wild plants carrying on atmospheric nitrogen fixation in forest area of Distt: Poonch Azad Jammu Kashmir.	1st semi-annual
S-KU/Bio (181)	Systematic distribution of the flavonoid in papilionoid.	1st semi-annual
C-QU/Chem (193)	Calculations of potential energy surfaces for ion pairs derived from alkali and alkaline earth metal reduction of substituted ethlenes.	2nd semi-annual
C-PMNH/Earth (38)	Mineralization and petrogenetic study of rocks.	1st semi-annual
P-CSIR/Engg (23)	Design, development & fabrication of a continuous tray dryer.	1st semi-annual
C-QU/Maths (16)	The pseudo-newtonian formalism.	3rd semi-annual
C-QU/Phys (67)	A study of coherence properties of radiations in lasers and quantum optics.	2nd semi-annual
C-QU/Phys (78)	High resolution studies of atoms and molecules.	1st semi-annual
P-PU/Phys (60)	The chou-yang model for high energy scattering and its comparison with QCD for large momentum transfer.	3rd semi-annual
C-QU/Phys (69)	Wave propagation and transport phenomenon in controlled fusion.	1st semi-annual

C-QU/Phys (70)	Study of plasma focus discharge.	1st semi-annual
C-QU/Phys (75)	Numeral/experimental study of Z-O pinch device.	1st semi-annual

ii) Annual Reports:

Total of six (6) 1st annual and eight (8) 2nd annual reports in respect of following on-going projects were received by the Foundation, during the report period:

1st Annual Reports:

Project No:	Project Title:
S-SU/Bio (159)	Ecological studies on some desert plants in district Khairpur, Sindh, Pakistan.
S-KU/Bio (161)	Survey and determination of resistance in mosquitoes and houseflies of Karachi region.
S-KU/Bio (170)	Plasmid of gram positive as tools for genetic engineering.
P-PU/Bio (174)	Teratogenicity and embryotoxicity of two commonly used insecticides in mice.
P-PU/Chem (208)	Evaluation of trace elements and aerosols in air and their effects of urban environment of Punjab area in Pakistan.
P-CSIR/Engg(23)	Design, development and fabrication of a continuous tray dryer.

2nd Annual Reports:

S-AU/Agr (90)	Pathogen-free potato plant regenerated from meristem tip-cultures.
P-CSIR/Agr (95)	A survey of toxigenic fungi in agricultural commodities.
C-QU/Chem (193)	Calculation of potential energy surfaces for ion pairs derived from the alkali and alkaline earth metal reduction of some substituted ethylenes.
S-KU/Chem (205)	Isolation, structure elucidation and biological activity of the chemical constituents of some composite plants.
C-QU/Phys (58)	Preparation and study of the high Tc super conductors
P-PU/Phys (60)	The Chou-Yang model for high energy scattering and its comparison with QCD for large momentum transfer.
C-QU/Phys (67)	A study of coherence properties of radiation in lasers and quantum optics.

After preliminary scrutiny by the staff of Research Support section, the above reports were sent for detailed evaluation to the subject experts in the relevant fields. The progress reports alongwith the evaluation reports were then submitted to respective Technical Committees for consideration and acceptance. The remarks of the technical committee, if any were conveyed to the Principal Investigators of the projects for requisite action.

Research grants totalling to Rs. 2,415 million were released on account of various installments in respect of the on-going projects mentioned in subpara (a), (b) and (c) above, after their technical and fiscal evaluation.

b) Completed Projects:

Final reports of six research projects titled below were received during the year. The reports were evaluated by the subject experts. Subsequently, these reports alongwith reviewer's comments were submitted to the relevant Technical Committees for consideration and adoption:

Project No:	Project Title:
P-TICR/Bio (145)	Collection and record of reptilian faunal of tableland Potwar, Punjab, Pakistan.
P-BZU/Bio (154)	Ecological guidelines for explosion of natural resources in Thal and Cholistan sand dunes.
P-PU/Bio (173)	Studies on the siwalik proboscidea and reptilia collected during the project NO. P-PU/Bio (102) and (141)
B-BU/Chem (178)	Immobilization of enzymes and their applications in "Flow injection analysis" for the determinations of substrates of diagnostic importance.
S-AKU/Chem (191)	Multiform of dihydrofolate reductase.
C-QU/Phys (64)	Theoretical/experimental computational study of some aspects of plasma/fusion physics.

Brief summaries of the work accomplished under the above projects are as given below:

Project No.	P-TICR/Bio (145)
Project Title:	Collection and record of reptilian fauna of table-land potwar, Punjab, Pakistan.

Herpetology of table-land Potwar (Punjab) which includes districts of Attock, Jhelum, Rawalpindi and Islamabad is poorly reported, and no thorough collection/records are available from this area. Under this project, a survey including ecological, taxonomical & zoogeo-graphical of herp animals (i.e. amphibians and reptilia) was carried out in the area. The salient findings of the study are as under:

- i. A checklist of the reptilian species inhabiting the tableland area has been prepared a part of which has already been published.
- ii. Some species, once reported from the area with no subsequent record have also been recorded, which are as under:
 - a) *Bufo viridis*: an element of paleritic fauna has also been reported from the area, which appear to be based on misidentifications or some stray individuals washed down by the Kabul River. No distant population of this toad has been found in the table-land.
 - b) *Gymnodactylus fedtschenkoi*, had been reported from salt range, and Baluchistan. But, these show that its Pakistani record is based on misidentified specimens
 - c) *Gymnodactylus montiumsalsorum*, it has been reported from salt range, and is known now by a single much broken specimen in the British Museum, London. It has been found quite common in the Salt range.
- i) During herpetological study of the area it has been observed that geckes,, *Tenuidactylus indusoani*, and *T. rohtasfortai*, are common in the area, and have a much wider distribution.
- ii) *Cyrtodactylus dattanensis*, once described from Hazara division, NWFP is common in alpine Punjab.
- iii) *Hemidactylus persicus*, which is a common gecko in Baluchistan and lower Sindh, has also been reported from Rohtasfort, Jhelum. Discontinuous distribution of this gecko reflects the historic movements of armies from Punjab-Baluchistan-Persia in the days of Moughals.
- iv) *Varanus bengalensis*, has been found to differ ecologically from *V. griseus*. Former lives salutarily under frog rather than in burrows. On the other had *V. griseus* are gregarious, living in burrows made in hard ground with sparse grass. It seldom extends in the rocky terrain.
- v) *Liolopisma himalayanum*, has been reported in the alpine part of Punjab, but not extending in the plains.

vi) *Agama agrolepis*, *A. nekabur* and *Coluber rhodorachis*, are confined to the rocky area of the table-land and not descending in the plains.

vii) *Agama agilis*, *Uromastys hardwickii*, and *Coluber ventrroma-culatus*, are plain forms, occurring in the plains part of the plateau, and not ascending into the rocky outcrops.

Zoogeographical analysis of the collected animals shows that the alpine part of the districts Rawalpindi and Islamabad has peculiar affinities. It has also been noted that for several Himalayan forms this area is western-most extent of distribution.

Project No: P-BZU/Bio (154)
Project Title: Ecological guidelines for exploitation of natural resources in Thal and Cholistan sand dunes.

In arid land ecosystems such as the Thal and Cholistan (Pakistan), it is difficult to choose the correct terminology to designate the ecological status of the desert vegetation. Among the features peculiar to desert vegetation are the floristic overlaps between the communities change in the composition of plant communities by mulching effect of sand, and the free admission of annuals. The other possible explanation is that the deserts are 'young' on the evolutionary time scale and there has not been enough time to exploit these niches to evolve. This implies that deserts have not reached their ecological and evolutionary equilibrium.

During the course of investigations on various sites the water balance of certain typical plants of the desert. Were analysed Studies were carried out on plants namely: *Acacia aquemonti*, *Aerva persica*, *Calligonum polygonoides*, *Calotropis procera*, *Capparis decidua*, *Crotolaria burhia*, *Cyperus niveus*, *dipterygium glaucum*, *Haloxylon multiflorum*, *Leptadenia*, *Pyrotechnica*, *Prosopis cineraia*, *pennisetum divisum*, *sacchrum munja*, *Salvador*, *oleoides*, *salsola haryosma*, *suaeda fruticosa*, *B. Cenchrus pennisetiformis*. These plants were collected from the vast desert tract of Cholistan and Thal during the hottest month (June) of the season. Lloyd's method was used to study the different parameters.

In all the plant species observed, the leaves are amphistomatic. However the frequency of stomata is variable. The data collected shows the diversity the anomocytic is the most prevalent type. The other type such as anisocytic, paracystic, cyclocytic, brachuparacytic and amphi cyclocytic are also found.

The studies reveal that plants growing in different habitat display several anatomical and morphological adaptations which fit them to their particular environment.

Project No. P-PU/Bio (173)
Project Title: Studies on the siwalik proboscidea and reptilia collected during the project No. P-PU/Bio (102) and (141).

Proboscidean and reptilian fossil fauna collected from siwaliks was collected under previous projects, Their identification led to the conclusion that proboscidea are quite common fossils found in the siwalik area. The material studied belongs to gomphotheridae and is represented by twelve isolated teeth which are referable to four genera and eight species. Out of these, four specimens are fragmentary, and could be identified to genus level only. The material with identification note will be placed in the Pakistan Museum of Natural History, Islamabad.

Proboscides are large animals, and as such they are important not only to scientists, but to general public as well. Their specimens will attract the general public apart from the subject experts.

Project No. B-BU/Chem (178)
Project Title: Immobilization of enzymes and their applications in "Flow injection analysis" for the determination of substrates of diagnostic importance.

Analytical procedures in chemical pathology or biochemistry are performed to establish the cause and mechanism of disease. The flow injection analysis coupled with immobilized enzymes is the ideal analytical system in clinical practice in our socio-economic set up, as compared to classical methods of using readymade analytical kits, necessitating very high cost, on which thousands of million rupees are spent in Pakistan every year. With these objectives in mind the work in the proposed study was planned, and following achievements have been made:

- a) Construction of a flow injection system equipped with an electrochemical as well as spectrophotometric detector.
- b) Standardization and calibration of the system with standard solutions of hydrogen peroxide.
- c) Selection of a suitable support for the immobilization of enzymes and the preparation of a new support a phenolic resin and evaluation study.
- d) Applications of the system to the analysis of glucose in blood.
- e) Determination of total and free cholesterol in blood using immobilized enzymes in the established flow injection system.
- f) Establishment of an automated procedure for uric acid in blood, using urate oxidase.
- g) Similar procedures were established for xanthine, hypoxanthine, and xanthine oxidase.

- h) In connection with colostral estimation attempts are still in progress to establish a procedure for LDS-cholesterol estimation.
- i) Novel immobilized enzyme procedures were established for phospholipid which infact makes the heart of this final report.
- j) Development of immobilized enzymes based procedure for lipid bound sialic acid in serum was attempted a couple of times, but no success was made. The reason being the very heat sensitive nature of enzyme, aldolase and N-acetylneuraminidase which were received in the laboratory from the commercial firm twice in the denatured form. The only alternative now would be to isolate and purify these enzymes in the laboratory, and then to use them for experimentation.

Project No. S-AKU/Chem (191)
 Project Title: Multiple forms of dihydrofolate reductase.

The enzyme, dihydrofolate reductase is directly involved in DNA and RNA synthesis, because it maintains the pool of tetrahydrofolic acid, which is needed for the generation of the key precursor molecules for the biosynthesis of purview, and primidines. The enzyme binds tightly to the anticancer drug methotrexate, and hence has been the target enzymes in controlling various neoplastic disease.

The present study was undertaken to identify those forms of DHFR, which have low affinity for this drug, in various cancer cells, such as identification. With these objectives, the proposed plan of work was as under:-

- i) Identification of low and high affinity forms of enzymes in various human leukemia cells, and in cancer tissues using MTX-binding assay system.
- ii) Development of enzyme-linked immunosorbent assay (ELISA).
- iii) Using ELISA for identification, and distribution of inactive forms of enzyme in cancer cells as well as in serum and urine of cancer patients.
- iv) Characterization of these multiple forms of enzyme.

Nineteen samples of human leukemia cells and 27 samples of normal and tumor tissues from gastrointestinal cancer patients were analysed and the low-affinity form of enzyme was found to be present in most of them. As far as the second objective is concerned, using calf liver DHFR, ELISA has been developed which in conjunction with (3 H) MTX binding assay was used to quantitate functional and non-functional forms of DHFR in various leukemia cells.

This study has provided an unambiguous evidence regarding the presence of a form of DHFR having low affinity for MTX in human leukemia cells, and in certain normal and cancerous tissues. These studies would help in correctly assessing the optimal therapeutic doses of MTX in a particular type of cancer, so that tumor cells could be effectively killed with minimal injury to normal cells. The newly developed ELISA procedure has facilitated studies on the immunoreactions, but not non-functional forms of DHFR. Such studies would be of value to find out the role of these proteins in float metabolism.

Project No. C-QU/Phys (64)
Project Title: Theoretical/experimental/computation study of some aspects of plasma/fusion physics.

During this project the problem of nonlocal heat transport was in the presence of steep temperature and density gradients studied. A model was presented which is based on solving the reduced Fokker-Planck equation in the static limit using diffusive approximation for the expansion of the electron distribution function. In particular, the role of density gradient and the finite-Z in the heat transport is determined. For high-Z or moderately high-Z plasma, the heat flux initiation factor is in agreement with the numerical Fokker-planck simulations.

In the gentle gradient limit, the classical Spitzer-Härm heat flux alongwith the usual finite-Z correction factor is obtained, and also result is recorded. The finite-Z effect on nonlocal heat transport was studied. The model was further generalized by employing nondiffusive approximation for solving the reduced Fokker-Planck equation with finite-Z correction.

The effect of a weak ambipolar field on the nonlocal heat transport is also investigation using diffusive as well as nondiffusive approximation. It was found that for a moderately high-Z plasma with steep temperature gradient the maximum heat flow expression was modified and the ensuing results agree well with the experimental results.

During the experimental work, the effects of anode length and insulator sleeve material on neutron yield as well as neutron fluence anisotropy from a 3 kJ plasma focus, that was developed in Quaid-i-Azam University Laboratory in 1986-87 with help of this project was investigated:

3. SCIENTIFIC SOCIETIES/LEARNED BODIES:

The promotion of learned bodies, scientific societies/ associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular.

The Foundation is making annual grants to the established learned bodies and scientific societies, as partial financial assistance for the achievement of their approved objectives and publication of their respective scientific journals. Annual

grants amounting to Rs. 0.420 million were released during the year, 1991-92 to following scientific societies:

Name of Society	Grants in Rupees
- Pakistan Academy of Sciences	Rs. 1,00,000/-
- Pakistan Association of Scientist and Scientific Professions:	Rs. 30,000/-
- Scientific Society of Pakistan:	Rs. 50,000/-
- Pakistan Association for the Advancement of Science:	Rs. 50,000/-
- Pakistan Medical Association:	Rs. 15,000/-
- Zoological Society of Pakistan:	Rs. 30,000/-
- Botanical Society of Pakistan:	Rs. 25,000/-
- Biological Society of Pakistan:	Rs. 25,000/-
- Pakistan Society of Biochemists:	Rs. 15,000/-
- Chemical Society of Pakistan:	Rs. 30,000/-
- Institute of Electrical Engineers:	Rs. 20,000/-
- Pakistan Society of Nematologist:	Rs. 10,000/-

Grants totalling to Rs. 0.100 million were also sanctioned to various institutions for publication of scientific journals as detailed below:-

Name of Publication/Journals:	Amount of Grant:
- Journal of Pharmacy	Rs. 10,000/-
- Journal of Science, Technology and Development:	Rs. 20,000/-
- Mehran University Research Journal	Rs. 10,000/-
- Pakistan Journal of Forestry	Rs. 10,000/-
- Pakistan Oral & Dental Journal	Rs. 10,000/-
- Journal of Natural Science and Mathematics:	Rs. 10,000/-
- Urdu Journal "Tahqeeq"	Rs. 10,000/-
- Pakistan Veterinary Journal	Rs. 10,000/-
- Journal of Pharmacology	Rs. 10,000/-

4. TRAVEL GRANTS

Foundation provides travel grants to the scientists for participation in international conferences in order to enable them to present the findings of research carried out by them within the country, exchange information regarding recent advances in their respective fields of specialization, and visit reputed research laboratories in foreign countries. But due to ban imposed by the federal government no body could avail this facility during the report period . However, travel grants totalling to Rs. 0.072 million were sanctioned to three (3) scientists during the report period for post-doc studies as per details given below:

- Dr. Barkat Ali Soomro, Rs. 29,909/-
Director Cotton Research Institute, Sakrand
was granted a travel grant (return air-fare) to
avail a EEC post-doc Fellowship at Cotton & Industrial
Plants Research Institute, Sindos, Greece.
- Dr. Abdullah Khan, Department of Chemistry, Rs. 19,200/-
University of Baluchistan, Quetta was granted
a travel grant (return air-fare to avail a EEC
Post-Doc. Fellowship at the University of Aberdeen, U.K.
- Dr. Muhammad Afzal, Director PASTIC Rs. 22,722/-
National Centre, Islamabad, paid a one week visit
to the Peoples Republic of China and travel grant was
provided by the Foundation.

5. AWARDS AND FELLOWSHIPS

An amount of Rs. 0.036 million was released to the University of Baluchistan Quetta and University of Sindh, Jamshoro on account of M.Phil Fellowships to the research fellows working in the Chemistry Department.

6. INTERNATIONAL LIAISON

- Dr. B.K. Jones, Senior Lecturer, School of Physics and Material Science, Lancaster University, U.K. visited Pakistan from 21st November, 1991, Under M.O.U. between Pakistan Science Foundation and Royal Society, London. During his stay in Pakistan he delivered lectures, and held meetings with his counterpart scientists at the Physics Department, Quaid-i-Azam University Islamabad and center for solid state physics, University of Punjab, Lahore. His visit was sponsored by the Foundation.

- Under item No. 209 of the 10th S&T protocol of the Government of Islamic Republic of Pakistan and the Peoples Republic of China a 2-week visit of 4-member delegation of Pakistani Geologists to the Geology Institute of Chinese Academy of Sciences in Beijing was arranged . An expenditure of Rs. 91,075/- was incurred on account of return air-fare and incidental charges.

7. OTHER ACTIVITIES

- i) The following reports/information were prepared and sent to the Ministry of Science & Technology:
 - Public Sector Development Programme for 1992-93 in respect of PSF, PMNH and PASTIC.
 - Allocation enquired by PSF, PMNH and PASTIC in the 8th 5-years plan.
 - Demand-led conceptual programme for the next five years.
- i) Mid-term 3-years rolling budget for the years 1992-93 to 1994-95 in respect of development projects of PSF, PMNH and PASTIC.
- ii) Allocation required during 8th five years plan for development projects.
- iii) The development programmes of PSF, PMNH and PASTIC was monitored regularly.
- iv) Several other reports/statements/information required by the Ministry of Science and Technology were prepared and sent to the Ministry.

B. SCIENCE POPULARIZATION SECTION

1. FUNDING FOR CONFERENCES/SEMINARS/SYMPOSIA

The Pakistan Science Foundation provides financial assistance for national and international seminar/conferences/symposia etc. held in Pakistan. During the financial year 1991-92 grants totalling Rs. 0.460 million were provided to various scientific organizations and institutions for organizing events detailed as:

S.No	Event	Organized By	Amount
1.	Second Pakistan Geological Conference.	Department of Geology, University of Peshawar.	Rs. 20,000/-
2.	Workshop on Paleomagnetism & Plate Tectonics.	Department of Geology, University of Peshawar.	Rs. 20,000/-
3.	3rd National Chemistry Conference.	Gomal University, D.I.Khan.	Rs. 20,000/-

4.	National Symposium on Artificial Intelligence.	Deptt. of Computer Sciences, University of Peshawar.	Rs. 20,000/-
5.	5th National Conference on Solid State Physics.	Center for Solid State Physics, University of Punjab, Lahore.	Rs. 20,000/-
6.	Symposium on Contemporary Biology	Pakistan Biological Sciences, PMRC Research Center, Fatima Jinnah Medical College, Lahore.	Rs. 25,000/-
7.	5th International Symposium on Natural Product Chemistry	H.E.J. Research Institute of Chemistry, University of Karachi.	Rs. 40,000/-
8.	National Symposium on Status of Plant Pathology in Pakistan.	Deptt. of Botany, University of Karachi.	Rs. 20,000/-
9.	International Symposium, on New Genetical Approaches to Crop Improvement	Atomic Energy Agricultural Research Center, Tando Jam.	Rs. 25,000/-
10.	International Workshop and Conference on Quark Matter and Heavy Ion Collission.	Faculty of Sciences, Gomal University, D.I. Khan.	Rs. 20,000/-
11.	Workshop on Parallel Computing Architectures and Applications.	Deptt. of Electronics, Quaid-i-Azam University, Islamabad.	Rs. 15,000/-
12.	First International Conference of Pharmaceutical Chemistry, University of Karachi.	Faculty of Pharmacy, Deptt. of Pharmaceutical Chemistry, University of Karachi.	Rs. 20,000/-
13.	12th Pakistan Congress of Zoology.	The Zoological Society of Pakistan, Deptt. of Zoology, University of the Punjab, Lahore.	Rs. 20,000/-
14.	Workshop on Science & Technology Reporting	Pakistan Council for Science & Technology, Islamabad.	Rs. 50,000/-
15.	26th Session of the National Science Conference	Islamia University Bahawalpur/and Scientific Society of Pakistan.	Rs. 25,000/-
16.	4th National Symposium on Frontiers in Physics	Deptt. of Physics, Quaid-i-Azam University, Islamabad.	Rs. 15,000/-

17.	Seminar on Strategies of agriculture Development in Pakistan in the next Decade."	Old Boys Association. University of Agriculture, Faisalabad.	Rs. 20,000/-
18.	"First International Congress on Environment, Geo-Cancerology and Cancer Control.	Cancer Research Foundation Pakistan	Rs. 35,000/-
19.	Segmite Workshop on Industrial Minerals.	Institute of Geology, University of Punjab, Lahore.	Rs. 15,000/-
20.	National Seminar on Study and Management in Coastal zones in Pakistan.	Marine Reference Collection Center, University of Karachi.	Rs. 15,000/-

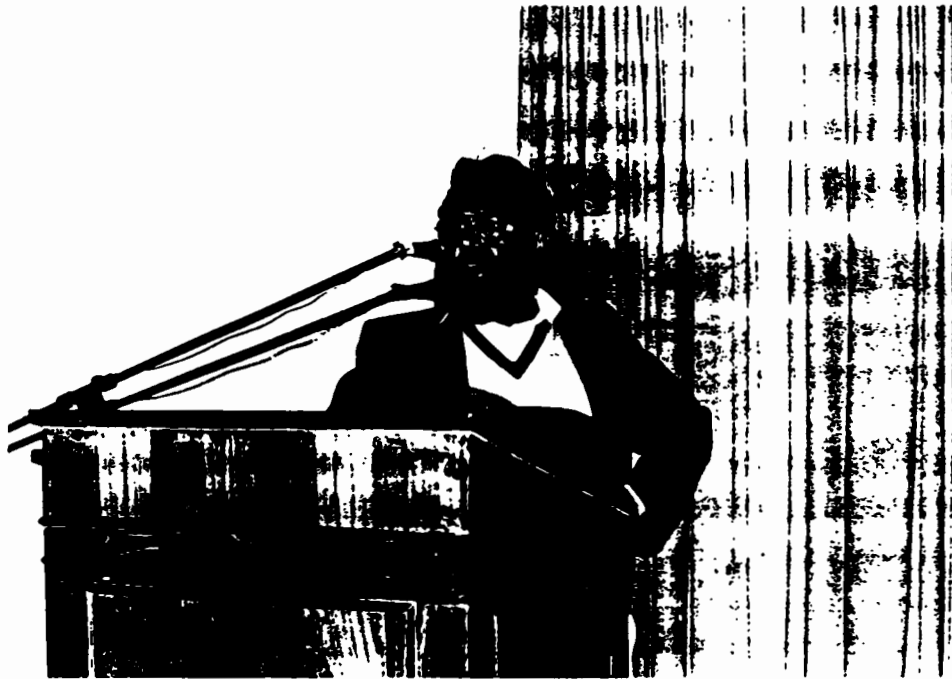
2. SCIENCE FAIRS/EXHIBITIONS

Foundation collaborates with Boards of Intermediate & Secondary Education and Education Department to organize annual science fairs/exhibitions for students. During the period under report grants totalling Rs.0.04 million were sanctioned to various organizations for organizing the following events.

Event	Organised by	Amount
- Summer School in Science for Talented Students of Higher Secondary School.	Board of Intermediate & Secondary Education, Multan.	Rs. 20,000/-
- First Ksahmir Scientific & Cultural Exhibition.	Kashmir Society of Scientific & Social Research, AJK.	Rs. 20,000/-
Total		<u>Rs. 40,000/-</u>

3. POPULAR SCIENCE LECTURES

The arrangement of monthly popular science lecture is the Foundation's normal activity. Scientists/Educationists are invited to speak, express themselves in non-technical language for the benefit of the mixed audience comprising scientists, school students, journalists and the general public. During the report period following lectures were arranged in the lecture hall of the Pakistan Science Foundation.



Dr Bashir Ahmed Chandio, Chairman, Pakistan Council for Research in Water Resources, Islamabad, delivering a talk on "Specialized Irrigation Technologies for Islamabad



A view of the audience

<u>Topic of the Lecture</u>	<u>Name of the Guest Speaker</u>
Possibilities of uniform lunar calendar of the muslim world.	Dr. M. M. Qureshi, Secretary General & Editor, Pakistan Academy of Sciences, Islamabad.
"Metal Fatigue" current development.	Dr. Keith J. Miller, Director Structural Integrity Research Institute, University of Sheffield, U.K.
Specialized irrigation techniques for Islamabad.	Dr. Bashir Ahamed Chandio, Chairman, Pakistan council for Research in Water Resources, Islamabad.
Valuable plants of Cholistan desert.	Dr. Muhammad Rashid Awan, Associate Curtour, Pakistan Musuem of Natural History, Pakistan Science Foundation, Islamabad.

The lecturers were presided over by Dr. Bashir Ahmed Sheikh, Chairman, Pakistan Science Foundation, Islamabad and attended by educationists, scientists, journalists, college students and general public.

4. SCIENCE FILM/PLANETARIUM SHOWS

Foundation has established a library of highly informative and interesting science films including Britannica Films, films from MMI Corporation and National Films Borad of Canada, the Allama Iqbal Open University and USIS. These films are taken to schools and screened for students. During the period under report 146 film shows were arranged for students.

The Foundation arranges planetarium shows in schools for students with the help of portable planetaria. It provides information regarding stars, planets, galaxies and solar system in very effective ways. During the period under report 134 planetarium shows were arranged for students in various schools of Rawalpindi/Islamabad

5. DONATION OF SCIENTIFIC BOOKS/MAGAZINES

Science books & magazines are distributed to educational institutions, free of costs, by the Pakistan Science Foundation. Under this programme the Foundation has provided Science Encyclopaedia, books, T.V Sets & VCPs etc. During the period under report the books/magazines donated to various institutions are detaild below:

- Popular science magazines "Jadeed Science, Science Bachoon Key Liye" published by the Scientific Society of Pakistan is being subscribed to various schools of Pakistan for the last five years. These schools are mostly selected from the remote areas of Pakistan such as FATA, FANA, AJK, Balochistan. Initially these magazines were provided to 400 schools. By adding 100 schools each year, this number now has risen to a total of 700 schools.
- Another popular science magazine "Science Digest" is being provided by the Foundation to 60 schools of FATA, FANA AJK, and Balochistan. This magazine is being provided to the schools for the last five years.
- 200 copies of the book "Insani Jism Kiyun Aur Kaisay" by Mr. Munir Ahmed were purchased. 185 copies of this book were donated to the libraries of the schools from FATA, FANA, AJK and Balochistan.
- 100 copies of Dr. Raziuddin Siddiqui's book "Science and Development in Muslim World" were purchased. 90 copies of the same were donated to the libraries of Universities, centers of Excellence, Medical Colleges, Engineering & Agricultural Colleges and other Research Organizations.
- A set of 30 books on science-related themes, comprising Pakistan Science Foundation and Urdu Science Board publications was donated to Shahid Model School (Regd) Multan.

6. PSF SCIENCE BULLETIN

The Pakistan Science Foundation has launched a quarterly science bulletin. This bulletin contains information regarding scientific activities of different organizations, scholarships available in science, job opportunities and PSF activities. It also contains articles of general interest to scientists. The bulletin is mailed to universities, centers of excellence, medical colleges, engineering colleges, agricultural colleges and other research organizations. The 3rd issue of bulletin has been published.

7. SCIENCE ESSAY COMPETITION AT UNIVERSITY LEVEL

Pakistan Science Foundation has announced the Science Essay Competition at university level for postgraduate students as per directives of the Ministry of Science & Technology. The language of the competition is both English and Urdu. The theme for this year is; "Science and Technology for Self-Reliance".

The universities have been requested to publicise competition among students, receive entries and evaluate them for 1st, 2nd & 3rd positions, separately, for Urdu and English. These then may be forwarded to the Foundation for the award of prizes as per detailed given below:

- 1st Prize : Rs. 1000/-
 2nd Prize : Rs. 600/-
 3rd Prize : Rs. 400/-

After receipt of the entries from universities in this competition, the Foundation shall evaluate these entries for competition at national level through a panel of judges, and the following three prizes will be awarded to the best three, each, in Urdu and English.

- 1st Prize : Rs. 5000/-
 2nd Prize : Rs. 3000/-
 3rd Prize : Rs. 2000/-

8. 16 mm SCIENCE FILMS

Following eleven 16mm films have been purchased from Encyclopedia Britannica Educational Corporation, USA against US \$4332/- (at discounted price) in form of UNESCO coupons.

S.NO.	NAME OF FILMS	DURATION (IN MINUTES)
1.	Social Insects: The honeybee	21
2.	What is a Computer?	20
3.	Problems of conservation: Wildlife	13
4.	Storms: the restless atmosphere	22
5.	What makes the wind blow?	12
6.	(Revision) Classifying living things (Award Winner)	21
7.	The night sky (2nd edition)	11
8.	The great lakes: how they were formed?	11
9.	Life story of a plant (about flowers)	07
10.	Earthquakes: Lesson of disaster?	13
11.	Antarctica: Exploring the frozen continent	23

The 16 mm films were then converted into VHS format, by the institute of educational technology, Allama Iqbal Open University, Islamabad. Commentaries of 35 english science films were also translated into urdu in the Foundation.

9. SCIENCE POSTERS PROJECT

Pakistan Science Foundation prepared posters packages containing a set of 10 posters on science related themes for free distribution to high schools throughout the country. The attractive pictures in colour illustrating scientific themes help greatly in promoting awareness of science and environment.

The 5th science posters set comprising of the following topics was prepared, printed and distributed to all the high schools falling within the jurisdiction of the board of intermediate and secondary education in the country and other R & D institutions.

1. ماحولیاتی آلودگی
2. موسم
3. جنگلی جانوروں کا تحفظ
4. مثالی گاؤں
5. پینے کے لئے پانی
6. پورے اور توانائی
7. زلزلے
8. Zoonoses. زونوسز
9. Portrait of Muslim Scientist "Ab Nasn Al-Farbi"
10. Portrait of Muslim Scientist "Ibn Rushd"

10. INTER BOARD SCIENCE POSTER CONTEST

Inter Board science poster contest is a regular activity of the Foundation. The theme for the year under report was "Science and the Environment". Nine Boards of Intermediate & Secondary Education participated in the contest organized by the Foundation. The following were awarded:

1. Miss Naja Lakho
Govt. Girls Pilot
Secondary School,
GOR Colony, Hyderabad. 1st Position Rs. 2000/-

- | | | | |
|----|---|--------------|------------|
| 2. | Miss. Fakhra S.A.Q.,
Govt. (N) Piggot
Memorial High School,
Hyderabad. | 2nd Position | Rs. 1200/- |
| 3. | Miss. Chanda Jamil
Queens Marry College,
Lahore. | 3rd Position | Rs. 800/- |

Prize money has also been sent to the prize winning students through their Boards of Intermediate & Secondary Education. The fifth poster contest was announced by the Foundation. The theme of the contest was "Future of Mankind in Space." Prize money for the Intra Board competition was Rs: 1000/-, Rs: 600/- and Rs: 400/- for first, second and third prize, respectively.

In response to announcement for 5th intra board science poster competition, nine boards of intermediate and secondary education participated. Prize money amounting to Rs. 1000/- (1st Prize) Rs. 600/- (2nd prize) and Rs. 400/- (3rd Prize) have been sent to the Chairman of each board for distribution among the prize winning students. The prize money of the inter board competition was; Rs: 2000/- (1st.), Rs: 1200/- (2nd) and Rs: 800/- (3rd).

11. INTRA BOARD SCIENCE ESSAY COMPETITION

The 4th Intra Board Science Essay Competition was organized during the year. The theme for the current competition is;

English "My vision of outer space in the promise it hold for my country and Mankind".

Urdu

Sindhi

Essay can be written in any of the three languages, i.e. English, Urdu, & Sindhi. The last date of receipt of the Essays from the Board has been fixed as 15th May, 1992.

The Prize money has been fixed as; Rs 1000, 600 and 400/-for 1st, 2nd and 3rd prize respectively.

The United Nation declared year 1992 as International Space year and celebrated it with member states. Pakistan also celebrated the International Space Year. The theme for the same has been selected to participate in the celebrations.

12. SCIENCE CARAVAN PROJECT

During the report period, three science caravan units remained actively involved in arranging science exhibition in the schools of their respective provinces i.e. Federal Area/Northern Punjab, Sindh and NWFP.

a) Federal Area Unit

The science caravan unit visited, F.G. Girls High School No. 5, Wah Cantt: Distt: Rawalpindi, w.e.f. 1.10.1991 to 15.10.1991 to arrange its exhibition at Wah Cantt: atlesat 10,000 students witnessed the exhibition.

The science caravan also arranged the exhibition in the Ist Kashmir Scientific and Cultural Exhibition held from 8- 10 December, 1991 at Muzaffarabad, Azad Kashmir. Planetarium shows were also arranged for the same. President Azad Jammu and Kahsmir alongwith distinguished guest visited the exhibition. Efforts of the Foundation for its science promotional activities were highly appreciated, 5000 students of schools and colleges witnessed the exhibition.

b) Sindh Unit

The science caravan unit arranged its exhibition at the Government Girls Municipal High School, Sukkur w.e.f. 6th October, 1991 to 15th November, 1991. Approximate 3500 students of the 17 Girls High/Middle schools witnessed the exhibition.

The Science Exhibition was also arranged at Govt. Comprehensive Boys High School, Sukkur for boy students of Sukkur and Rohri, w.e.f. 17.11.1991 to 6.1.1992.

c) NWFP Unit

The activity of science caravan was highly affected due to paucity of funds during the current year.

d) Punjab & Balochistan Unit

The Science Caravan Unit for Balochistan could not be launched in 1991-92 due to ban imposed by the Government on the appointment of staff.

13. SCIENCE CLUBS PROGRAMME

The Foundation has decided to increase the number of schools in Phase-II to 300. To date 234 schools have been enrolled. Prescribed proforma for "Membership for High School Science Clubs" have been sent to many schools inviting them to establish science clubs in their institutions. Following items were provided to each of the member of the science clubs programme.

1. Ten copies each of instruction booklet entitled "Project for high school science clubs" for carrying out interesting science projects.
2. Grant of Rs. 500/- for purchase of scientific equipment to carry out the experiments obtaining in the above instruction booklet.
3. A set of 30 books on science related themes published by Urdu Science Board, Lahore and the following booklets published by PSF.
4. One solar cooker (alongwith pot and instruction booklet).

The Pakistan Science Foundation provides literature on science to the member schools of science clubs programmes. These literature consists of useful collection on science in easy Urdu language. In order to benefit the students from various aspects of modern science this literature is changed from time to time. Now 1200 sets of 17 books on new science topics have been purchased from Urdu science board , Lahore. These books will be donated to the member of high school science clubs. Phase-I (500 schools) and Phase-II (300 schools).

Foundation has placed order for the purchase of 500 colorimeter for donation to the member schools of science clubs programme, out of which 378 alongwith their accessories have been received from elector scientific products, Lahore.

PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

During this report period both research and display activities of PMNH continued at a fairly rapid pace. The scientists remained busy to collect, preserve and identify natural history specimens from diverse localities of Pakistan so as to build a reference collection of plants, animals, rocks, minerals and fossils found in our country.

One of the objectives of PMNH is to establish liaison with similar institutions both within Pakistan and abroad. Two active joint research projects that remained under implementation were "Cryptogamic Expedition 1990-92 with Kyoto University and Natural History Museum, Tokyo, Japan" and "Herpetology of Pakistan" with Florida State University, USA. Both projects are envisaged to lead to the publication of books in the respective fields.

Among the main achievements of the Public Services Division was the implementation of the Renovation scheme for Display Corner at Marghazar. Many new exhibits were added here alongwith the display of "Hiroshima Stone" donated by the Japanese Government as a token of friendship.

Many foreign scientists/teams from Japan, UK, USA and Italy remained engaged in different collaborative research projects while PMNH scientists including Director, Botanical Sciences Division and Incharge, ZSD visited Japan and UK to assist in the compilation of book and to learn latest techniques regarding preservation, curation, exhibit planning and execution, etc. respectively.

The performance of various Divisions of Pakistan Museum of Natural History during the report period is as follows:

1. BOTANICAL SCIENCES DIVISION:

a) Reference collection:

A total of 10 extended trips to Gilgit, Hazara, Naga Parbat, Galiat, Cholistan Desert, Karachi, Swat, Chitral, Azad Kashmir, Rawalpindi Islamabad and adjoining areas were made regarding various projects of the Division. A total of 1800 specimens of higher plants and ferns; 550 fungal and 205 algal specimens were also collected.

b) Laboratory work:

Preservation of 1500 plant specimens was carried out, while 1250 specimens were mounted and labelled and 1000 higher plants; 400 fungal and 80 algal specimens were also identified.

c) Research work:

Preliminary studies on the flora of Cholistan and second year report on "Ecological studies on the vegetation of Swat area". were completed.

d) Extension work and Services Rendered to other Organizations:

The Division identified 247 higher plant specimens for various educational and research institutions. The collaboration with Kyoto University and Natural History Museum, Tokyo, (Japan) personnel regarding the project "Cryptogamic Expedition 1990-92" continued. In this respect various field trips were made and research articles were prepared to be included for the preparation of book "Cryptogamic Flora of Pakistan" Part II.

e) Publications:

- Shah, M. (1991). Taxonomic studies in the Fruticosae group of Potentilla from Pakistan and Kashmir. *Folia Geobotanica Phytotaxonomica* 26(1):107-109.
- Ahmad, S. (1991). An assessment of the proliferation of Broussonetia Papyrifera in Islamabad, *Scientific Khyber*, 4(2):93-97.
- Shah, M. and C.C. Wilcock (1991). Notes on genus Potentilla Rosaceae from Pakistan and Kashmir. *Folia Geobotanica Phytotaxonomica (Czechoslovakia)* 26(2):193-196.
- Ahmad, S. (1990). Occurrence of Sophora mollis in Attock District. *Biologia* Vol.36(2):33-35.
- Laghari, M.K. (1991). A guide to the plants of Pakistan, their common names and blooming period. Part I. *Surit* V.4(1-2):90-95.
- Shah, M. and C.C. Wilcock (1991). Notes on the genus Potentilla Part II (Rosaceae) from Pakistan and Kashmir. *Willdenowia* 21:195-199.
- Ahmad, S. (1990). The Acanthaceae of Islamabad. *Journ. Sci. Tech. University Peshawar*. Vol.13:105-110.

2. EARTH SCIENCES DIVISION:

a) Reference collection:

Surveys of Malakand agency, Swat District, Mianwali, Cholistan, Salt Range (Dandot coal field, Eastern Salt Range), Khewra, Trait, Pomel-Domel, Musakhel, Nammal Gorge areas were under taken and 300 rock samples, 150 mineral ores, 300 vertebrate fossils, 215 invertebrate fossils, 500 micro fossils were collected for further studies.

b) Laboratory work:

The Division studied 193 sediments, while 168 samples were washed/sieved and 157 samples were analysed. Thin sections of 395 samples were made, 352 samples were subjected to petrographic studies while 201 were analysed by X-ray Diffraction technique.

c) Research work:

A Project on, "Petrographic studies of Beryl mineralization in Malakand Agency and Dir District" was completed and projects on the following subjects were prepared.

- i) Biochronology and Systematics of Paleo-pleistocene Siwalik Mammals of Eastern Potwar, Punjab and Azad Kashmir.
- ii) Mineralogy and Geochemistry of Pb-Zn and Magnetite Deposits of Besham and NWFP, Pakistan.
- iii) The Stratigraphy of the Palaeo-Tethys Sea in the Karakorum Mountain, Pakistan.
- iv) Sedimentological Studies of Tobra Formation.

d) Extension work and Services Rendered to other Organizations:

The Division provided information to some mine owners regarding mineral potential of Salt Range and collaborated project with Dr. Khadim Hussain of Solid State Physics Deptt., of Punjab University is in progress.

e) Publications:

- Baqri, S.R.H. (1990). Exploitation of Nagarparker China clays as High Temperature Materials. Proceedings First Segmite Conference on Industrial Minerals pp 38-40.
- Baqri, S.R.H. (1990). The distribution of clay minerals in Patala Formation exposed at Nammal gorge. Kashmir Jour. of geology. Vol.6 pp.163-170.
- Roohi, G. and M. Sarwar (1990). Preliminary study of Lower Siwalik Tragulidae. Biologia, Vol.36(2):11-14.
- Baqri, S.R.H. and M. Zulfiqar, N. Iqbal and M. Ahmed. (1992). The mineralogy and geochemistry of the cambrian Baghanwala Formation in the Khewra Gorge, Eastern Salt Range. Nat. Hist. Bull., Vol.1(1): pp.29-34.
- Baqri, S.R.H. and G. Mustafa. (1992). The preliminary geological field studies of the Kussak Formation exposed at Ludwa Hills. Nat. Hist. Bull., Vol.1(1): pp.11-24.

3. ZOOLOGICAL SCIENCES DIVISION:

a) Reference Collection:

Surveys to various parts of Azad Kashmir including Muzaffargarh, Sharda, Athmaqam, Neelum Valley, Rawalakot were made. Other areas visited include Rawalpindi - Islamabad and adjoining areas, Galiat, Attock, Pindi Gheb, Peshawar, Karachi and Sialkot. A total of 455 herpetiles, 385 fishes, 1086 gastropods, 100 insects, 10 birds and 110 invertebrates were collected.

b) Laboratory work:

The Division catalogued 1310 faunal specimens and Identified 165 faunal specimens. Skinning of 36 animals was completed and Taxidermy of 48 animals was done and 25 models were prepared.

c) Research work

A project on, "Fauna of Margalla Hill National Park" is in progress, other project on "Medical Diptera" with Toyama University of Japan has been completed.

d) Extension work and Services Rendered to other Agencies:

Identified 82 insects for the students of schools/colleges and prepared write-ups of 14 animals for Dawah Academy, Islamabad.

A collaborative project entitled "Herpetology of Pakistan" is being carried out with Florida State University, USA. Another project on "Wild Mouse" is being initiated with Dr. Hidetoshi Ikeda from Aichi Research Institute, Nagoya, Japan.

e) Publications:

Hasan, S.A. (1990). A revision of the genus Eysarcoris Hahn (Heteroptera; Pentatomidae) with description of three new species from Indo-Malayan Subregion, Proc. Pak. Congr. Zool. Vol:129-138.

Hasan, S.A. (1991). A revision of the genus Antestia stal. (Heteroptera; Pentatomidae) from the Malayan subregion with description of four new species. Annot. Zool. Vol.205: 122.

Hasan, S.A. (1991). Ultrastructure of metathoracic scent glands in pentatomid bugs. Pak. J. Zool. 23(3):257-261.

Hasan, S.A. (1991). A new species of the genus Eysarcoris from Malayan subregion. Pak. J. Sci. Ind. Res. 34(9):322-345.

Sahibzada, S. (1991). Consort behaviour of free ranging Rhesus Monkeys Macaca malatta of Pakistan. Pak. J. Zool. 23(3):219-224.

4. PUBLIC SERVICES DIVISION:

a) Museum Display and Maintenance:

During the report period, following assignments were completed:

Renovation scheme for Display Corner at Marghazar was prepared and implemented including new exhibits and face-lifting of the building. PMNH stall was installed at S & T Expo-91 for which design and structure was completed.

New Display on "Strategic Minerals" was prepared.

Prepared the display of Hiroshima stone at Display corner.

Prepared 60 portraits of PMNH and PSOfficers/staff in connection with S & T Expo-91. Still and video coverage during the ceremony and activities was also made. Designed the visiting card and D.O. letter of D.G.

Marine fish aquarium was installed at Display Corner. Also added new plants into freshwater aquarium. Designed the book cover of "Cryptogamic Flora of Pakistan", and prepared colored visuals.

b) Educational Activities:

– Science films were regularly shown on TV and VCR at Display Corner for public education and awareness. Film shows for the students of various schools and colleges of Pakistan in the Main Museum's Audio-visual room on the following topics were also arranged.

- * Butterflies and Flowers
- * Fungi
- * Rockets; How they work
- * Animals and their homes
- * Insects in Garden etc

– Guided tours were provided to 2643 students and 223 teachers belonging to various educational institutions of Pakistan.

c) Services Rendered to other Organizations:

NATIONAL MUSEUM OF SCIENCE AND TECHNOLOGY, LAHORE.

Designing of "Solar System" and "Earth Globe" models was completed and these are in the process of being manufactured for Natural History Section of NMST.

Eighty three specimens of birds, mammals, reptiles and fishes etc. were shifted after preservation/taxidermy etc. to Lahore.

Submitted working paper for the proposed "Baluchistan" diorama. Two dioramas "Marine Ecosystem" and "Man and Environment" were under construction.

PAKISTAN SCIENCE FOUNDATION

Prepared and designed one page calender of 1992 for the fourthcoming Science Bulletin of PSF. Layout plans, installation and execution of S & T Expo-91 exhibition were carried out.

Provided information and write-up on "Mangroves of Pakistan". Fifth set of science posters was prepared Designed and prepared "Invitation Card, Shield and banners" for the various events of Second Science and Technology Fair.

PASTIC

Designed and completed artwork of PASTIC brochure and "Pakistan Science Abstract".Exposed 72 colored photographs for PASTIC.

d) Number of visitors:

Main Museum	11,000
Display Corner	170,700

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

1. INTRODUCTION

Pakistan Scientific & Technological Information Centre (PASTIC) formerly known as Pakistan National Scientific and Technical Documentation Centre, (PANSDOC) was established in 1957 and placed under the administrative control of Pakistan Council of Scientific and Industrial Research (PCSIR) at Karachi. The centre worked there upto 1973 and was transferred at Islamabad in 1974 with the name of Pakistan Scientific and Technological Information Centre (PASTIC) and placed under the administrative control of Pakistan Science Foundation.

LOCATION

- National Centre, Islamabad.
- Sub Centre, Lahore.
- Sub Centre, Karachi.
- Sub Centre, Peshawar.
- Sub Centre, Quetta.

OBJECTIVES.

- i. To collect, organise, classify & disseminate information in all disciplines of science and technology to the scientific community of Pakistan.
- ii. To develop inter-library cooperation for sharing of resources.
- iii. To establish and maintain links with international/regional information networks/agencies.
- iv. To train information specialists in modern information handling and management techniques.
- v. To develop and strengthen the National Science Reference Library.
- vi. To collect data on S&T information.

PASTIC caters to the S&T Information needs of scientists and technologists of about 400 S&T Research Institution of Pakistan. .

The Pakistan scientific & Technological Information centre under the aegis of Pakistan Science Foundation continued providing services of varied nature to fulfill the demand of R& D Sectors in the country. The activities carried out in terms of targets set by PASTIC & the achievements made are produced below:-

Document Procurement

The following Scientific and Technological Research articles/Documents were supplied to Researchers and Scholars during the report period.

From Last Year	New Orders Received	Orders Cancelled	Total Orders	Orders Supplied		Total	Under processes
				Foreign	Local		
2049	2387	176	4270	878	1191	2069	2276

Bibliographic Service:

Following bibliographies pertaining to specific scientific and technological topics were supplied to researchers/scholars.

S.No.	Title of Bibliography	No. of References
1.	Preparation of ferrites.	11
2.	Multi drug resistant shigellae.	24
3.	Mentha	22
4.	Radiation protection measures in diagnostic radiology.	08
5.	Haematology, RBC. WBC.	11
6.	Precancerous/white lesion of oral mucosa.	17
7.	Typhoid perforation.	70
8.	Fluorescent antibody techniques.	32
9.	Fracture angle of mandible.	32
10.	Air pollution.	10
11.	Bioavailability of iodine in the goitre endemic areas.	28
12.	Causes of appendicitis foreign body appendicitis.	12
13.	Preparation of potassium ferrocyanide.	10
14.	Spectra of copper oxide.	18
15.	Taxonomy of bovids.	03
16.	Ileostomy.	70
17.	Studies of free living diazotrophs as biofertilizer.	25

18.	X-ray diagnostic radiology and imaging.	32
19.	Molecular basis of antibodies resistance of bacteria.	12
20.	Internal combustion engines.	16
21.	Ignition system	28
22.	Management of acute severe asthma	80

Total: 713

Abstracting And Indexing Services:

PASTIC publishes a quarterly journal viz; Pakistan Science Abstracts which reports abstracts of research articles published in recent S&T research journals of Pakistan.

i) Pakistan Science Abstract (PSA)

PSA 1989 29(3-4) This issue was finalised and got printed.

PSA 1990 30(1&2) Complete text has been lying for printing in reprographic unit since Feb. 1992.

PSA 1990 30(3&4) Complete text of this issue was finally composed and has been sent to computer section for final print out on tracing paper.

PSA 1991 31(1-2) 204 abstracts were classified according to UDC schedules. 1024 keyword entries were prepared.

PSA 1991 31(3-4) 201 abstracts were classified according to UDC schedules. 1025 keyword entries were prepared.

PSA 1992 32(1-2) 17 journals were scanned and 207 abstracts were selected.

ii Copies supplied to

- a) Authors and organizations. 134 copies.
- b) Subscribers 236 copies despatched on exchange basis.

Union Catalogue:

- Serial Holdings record of 23 (twenty three) libraries was checked and finalized for producing Union Catalogue.

- Serial Holdings of 101 Libraries titles have been updated in order to produce Union Catalogue.

Acquisition Of Library Material:

1)	No. of Books acquired	103
2)	Issues of Periodicals received	947
3)	Issues of Documents received	85
4)	No. of references supplied to clients	1032
5)	Current Contents Service: Contents of the journals of 1989 on Biology, Chemistry, Computer and Medicine were supplied to registered clients. and Medecine were supplied to registered clients. Contents of 17 journals were supplied to 40 clients by Karachi sub-centre.	

International Liaison:

i) CEHANET: (Environmental Health Regional Information Network of WHO)

- i. National Environmental Health Documents Database: 261 records were added making the total to 730 records and were made available to CEHA.
- ii. National Collaborating Centres: 16 Environmental Health Organisations have agreed to join the National Information Network on Environmental Health as CEHANET National Collaborating Centre, (NCCS).
- iii. SDI: SDI was provided on, (a) Natural Disasters & Emergencies, (b) Drinking Water Quality, (c) Air & Water Pollution, (d) Biological Quality of Drinking Water.
- iv. Environmental Health Personnel Directory: 32 more entries were entered in this database making the total to 313.
- v. National Training Course on CEHANET Procedures was conducted from 1-6 February, 1992 at Lahore.
- vi. Querries: Requests were received on (i) Saline Water use in Agriculture, (ii) Reclamation of Soils. (iii) Water-borne diseases, (iv) Malaria Control, (v) Endemic Goitre.

ii INFOTERRA: (UNEP's International Referral System).

- i. Environmental Information Sources; Letters were despatched to 100 organisations for information about INFOTERRA along with the questionnaire regarding International Directory of Sources on Environmental Information. 26 INFOTERRA coding sheets were prepared from the data received and sent to INFOTERRA, Nairobi.
- ii. Promotion of INFOTERRA was undertaken by sending the Infoterra Publications list to environmental organisations/institutions.
- iii. SDI₂ was provided to WAPDA, EPA, Environment & Urban Affairs Division, NIO, Centre of Excellence in Marine Biology and CDA on (i) Water Pollution; (ii) Water quality; (iii) Global Warming; (iv) Tree Plantation; (v) Rural and Urban Housing; (vi) Domestic Wastewater management (vii) Control of Environmental pollution in Urban Areas (viii) Vehicles and Health, (ix) Pollution control from Brick Kilns & Industries. (iv) Queries: Information was supplied on (i) Vehicular effects on health (ii) Guidelines for control of Vehicular pollution (iii) Transport and Health (iv) Tanneries and the Environment (v) Energy requirements (vi) Hazardous Wastes; (vii) Satellite Spot Imagery Systems; (viii) World Weather, Watch Systems; (ix) Use of Optical Cable Systems; (x) Reclamation of Soils; (xi) Water Reclamation.

iii ASTINFO: (Regional Network for Exchange of Information and Experience in Science & Technology).

- i) Distribution of the ASTINFO Newsletters was under taken.
- ii) Planning was done in the light of the recommendations made in the 8th ASTINFO Consultative Meeting.
- iii) Information was supplied for PGI on Evaluation of the Impact of ASTINFO. Country report was prepared for the ASTINFO LIAISON OFFICER for participation in the 8th consultative meeting. Views were provided on Evaluation Report of ASTINFO.
- iv) CDS/ISIS package was supplied to WAPDA & UAF on request.
- v) A list of environmental institutions was supplied to Central Environmental Authority, Sri Lanka on request.
- vi) A survey questionnaire for Micro CDS/ISIS applications was sent to 45 organisations. So far 10 have responded.

iv UNESCO:

- i. A brief was prepared for the delegate for participation in the Intergovernmental Council Meeting for PGI, Nov. 1991 Paris.

v MISCELLANEOUS: (Bilateral Cooperation Programmes, SAARC Country Reports etc).

- i. Questionnaires from ILEC/UNEP, Kenya, Turkey and UNESCO were filled in and returned.
- ii. Visits were made to the National Talent Pool, OPF for data collection about Pakistani Scientists, Engineers & Technicians working abroad. Data was provided by the National Talent Pool.
- iii. A summary of Training Courses for foreign nationals was prepared and forwarded to PSF.
- iv. A feasibility report/PC-1 of the project "Establishment of Satellite Data Link" was prepared and finalised.
- v. Comments on 2nd Regular Session of the ESC was sent to MoST.
- vi. Implementation of 7th protocol with China was started.
- vii. A detailed report on the status of NCTT, NADLIN and PASTIC was submitted to MoST.
- viii. Comments on the status of the proposals made in the report of three Review Missions carried out by the British Library were provided to PSF. A project "Strengthening of STI Services" based on Hill's Report was prepared.
- ix. A course outline was sent to PSF regarding Training Course for para library staff, at PASTIC.

Reprographic Services:

i) PRINTING (Printing jobs of PASTIC and other S&T/R&D Organisation).

No.	Organisations	Jobs Completed
1.	Ministry of Science & Technology.	26
2.	Pakistan Science Foundation.	23
3.	PMNH	8
4.	PCST	6
5.	Ministry of Planning Development	1
6.	PASTIC Sub-Centre, Peshawar	1
7.	PCAT	2
8.	TIPS	1
9.	Quaid-i-Azam University	4
10.	PMRC	4
11.	Ministry of Finance	1
12.	COMSTECH	13
13.	PASTIC	13
		Total: 103

Total number of impressions. 272,320

ii) PHOTOCOPYING; 59699 pages photocopied, 4490 pages duplicated.

iii) COMPOSING; 6814 pages composed.

iv) LASER PRINTING 3016 pages printed.

v) GRAPHICS Statistical data analysed to produce graphical output of 109 pages of theses of Quaid-i-Azam University students. 12 graphical representations of PASTIC activities.

Computerization:

i) Data Bases

a) Twenty two (22) bibliographies were prepared consisting of 571 references.

b) The following Libraries Serial Holdings have been composed.

- i. "Centre of Excellence in Mineralogy, University of Balochistan, Quetta .95 records.
- ii. Central Archaeological Laboratory, Lahore 20 records.
- iii. Jinnah Postgraduate Medical Centre, Karachi. 562 records.
- iv. University Grants Commission, Islamabad. 135 records.
- v. Nishtar Medical College, Multan. 45 records.
- vi. National Institute of Silicon Technology, Islamabad. 14 records
- vii. National Institute of Electronics, Islamabad. 131 records.
- viii. Centre for Solid State Physics, University of Punjab, Lahore. 39 records.
- ix. Sindh Agriculture University, Tandojam. 289 records.
- x. Pakistan Ordinance Factory Library, Wah Cantt. 8 records.
- xi. Liaquat Memorial Library, Karachi. 6 records.
- xii. American Centre, Islamabad. 14 records.
- xiii. Physics Department, Punjab University, Lahore. 69 records.

c) 261 new records were fed into CEHANET National Database making the total to 730 records.

d) A database is created which contains data about Scientist and Engineers working abroad. 148 records were entered into the database.

ii) Data Analysis

a) Budget, Arrear, CP fund, Benovolent fund and Salary statements from July 1991 to June 1992 were prepared.

b) Science Bulletin for PSF composed on quarterly basis.

- c) PCAT Bulletin was composed on quarterly basis.
- d) Development of Science and Education in Pakistan, a book by Razi-ud-din Siddiqui.
- e) Feasibility report on establishment of satellite data link was composed.
- f) Different proforma composed for PCAT, PCSIR, PCST and MOST.
- g) Invitation cards for Quaid-i-Azam University were composed.
- h) "Eighth Five Year Plan" a report for Ministry of Planning (S&T) Section was composed.
- i) NARC Publication/Report was composed.
- j) PASTIC Brochure was composed.
- k) PSA 1990 Vol. 30 Issue (1&2) was composed.
- l) Documents, author cards were prepared. (730 cards.)
- m) Pakistan Systematics, Bulletin of the herbarium, Quaid-i-Azam University was printed.
- n) PSF annual reports from 1983-1987 were composed.
- o) Different matter composed for the workshop on CEHANET procedures.
- p) Invitation cards of PCRWR were composed.
- q) Visiting cards of various officers were composed.
- r) Articles on "Popularization of Science and Technology" by Dr. Bashir Ahmed Sheikh and "Science and Technology Museum and Development of Scientific Culture in Pakistan" by Dr. Bashir Ahmed Sheikh and Dr. Afzal were composed.
- s) Prepared diagrammatic and graphical representation of PASTIC activities.
- t) Paper composed for Mrs. M.D. Shami.
- u) Miscellaneous jobs of International Liaison Section of PASTIC.
- v) Miscellaneous Internal Jobs of PASTIC.

iii) **Software Preparation**

- a) Computer Software, Desk-top publishing services and Hardware facilities were provided to other S&T organisations.

Training:

i) Training imparted

A national course on DBASE3P, CDS/ISIS, NSTAT and SLIDE WRITE was conducted from 16-23 December 1991 for Pakistan Natural History Museum Scientists.

A Workshop on CEHANET Procedures from 1-6 February in Lahore was organised and conducted by PASTIC in which 12 Librarians/Information personnel participated. One resource person was invited from CEHA, Jordan and two were provided by PASTIC.

ii) Training received

An officer from PASTIC attended INFOTERRA Training held in Nairobi from 14 to 18 October, 1991. CEHANET Trainers, Amman, 21-25 June, 1992 was attended by Miss Nageen Ainuddin, Scientific Information Officer.

Important Technical Meeting

Budget meeting was held on 26- 9-91. Discussed various aspects including economy measures.

PASTIC Staff Welfare Advisory Committee meeting held on 28-9- 91. Several Recommendations/ decisions were taken by the members of the committee.

Expert group meeting on information networking in Hindukush Himaliyan region (ICIMOD) from 23-26th June 1992 in Beijing, China attended by Director, PASTIC.

Development Programme Of PASTIC:

The Development Programme has been carried out in the following two areas:-

a) Strengthening of PASTIC National Science Reference Library.

Library Project was approved for a peroid of 3 years at the cost of Rs. 4.00 million for the purchase of primary and secondary journals, reference books, etc. An amount of Rs. 0.1 million was provided in ADP 1989-1990 which was fully utilized during the report period.14 books were purchased and 28 S&T journals were subscribed.

b) Setting up Database facility at PASTIC:

The project was approved at a cost of Rs. 2.209 million for a peroid of 3 years. An allocation of Rs. 0.385 million received during 1991-1992 was fully utilized in obtaining the 5 Dispaly Units (Intelligent terminals), HP Paint Jet XL, HP SCAN JET IIC and 2 stabilizers

CHAPTER 2

ORGANIZATION AND ADMINISTRATION

The organizational structures of the Pakistan Science Foundation, Pakistan Museum of Natural History and Pakistan Scientific & Technological Information Centre are given on the forth coming pages.

The staff position in the Foundation, PMNH & PASTIC during the period was as under:

PAKISTAN SCIENCE FOUNDATION

Sr. No.	Designation	Number
1.	Chairman	1
2.	Member (Science)	1
3.	Member (Finance)	1
4.	Chief Scientific Officer	1
5.	Secretary	1
6.	Principal Scientific Officer	2
7.	Senior Scientific Officer	3
8.	Senior Research Officer	1
9.	Deputy Director (F&A)	1
10.	Deputy Secretary	1
11.	Science Promotion Officer	1
12.	Administrative Officer	1
13.	Accounts Officer	1
14.	Assistant Director (Budget, CP Fund and Pension)	1
15.	Research Officer	1
16.	PS to Chairman	1
17.	Librarian	1
18.	Scientific Officer	6
19.	Internal Audit Officer	1
20.	Caravan Incharge	5
21.	Graphic Artist	2
22.	Superintendent	1
23.	Assistant Research Officer	1
24.	PA to Chairman	1
25.	Mechanic for Instrument	1
26.	Assistant Scientific Officer	1
27.	Accountant	1
28.	Supporting Staff	125
	Total :	165

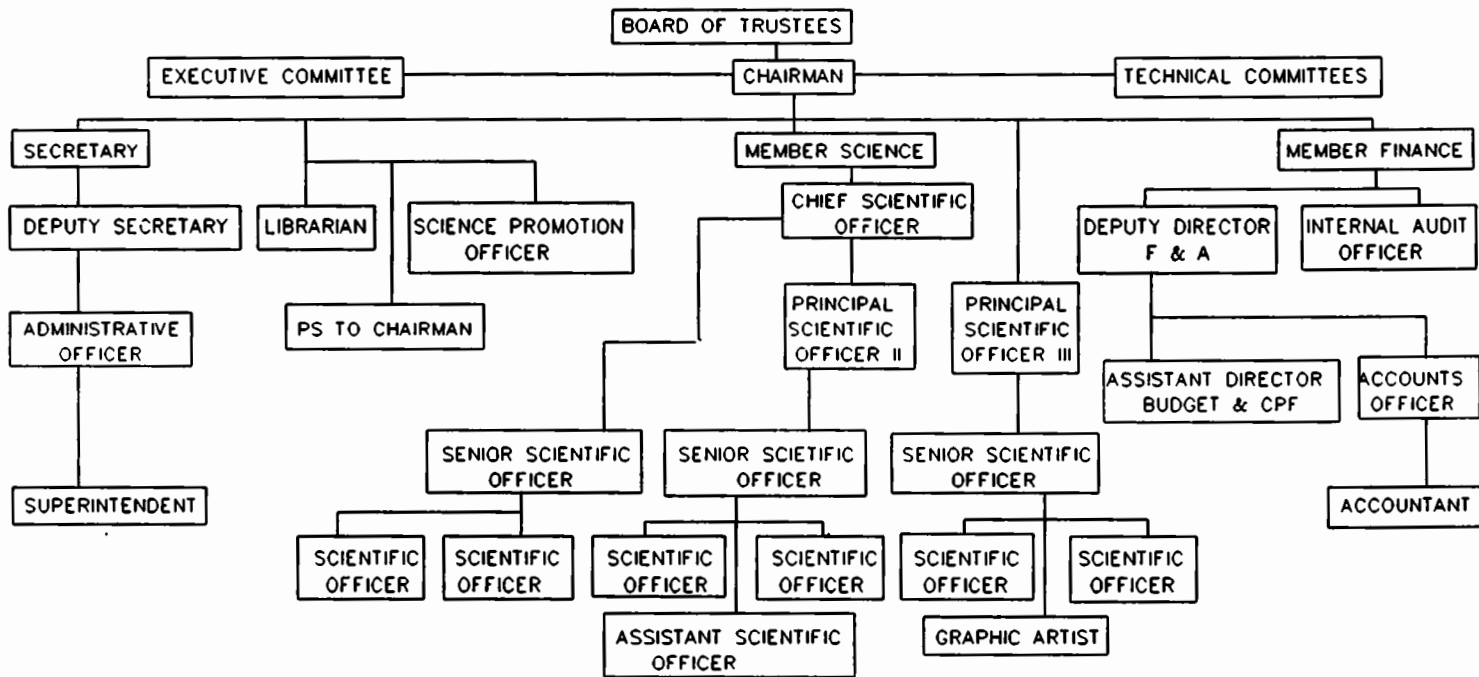
PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

S.No.	Designation	Number
1.	Director General	1
2.	Director	3
3.	Curator	3
4.	Associate Curator	11
5.	Product Designer	1
6.	Research Associate	21
7.	Artist	1
8.	Administrative Officer	1
9.	Accounts Officer	1
10.	Librarian	1
11.	Taxidermist	2
12.	Associate Artist	2
13.	Teacher Guide	1
14.	Superintendent	1
15.	Accountant	1
16.	Stenographer	1
17.	Casting Staff	1
18.	Modeller	1
19.	Children Education Programmer	1
20.	Stenotypist	3
21.	Calligrapher	1
22.	Assistant Artist	2
23.	Fossil Preparator	1
24.	Photographer	1
25.	Office Assistant	1
26.	Purchase Assistant	1
27.	Accounts Assistant	1
28.	Cashier	1
29.	Senior Collection Incharge	2
30.	Key Punch Operator	1
31.	Incharge Embalming	1
32.	Skeleton Preparator	1
33.	Collection Incharge	2
34.	Drying & Fumigating Assistant	2
35.	Tracer	1
36.	Electrician	1
37.	Lath Machine Operator	1
38.	Painter	1
39.	U.D.C.	2
40.	Store Keeper	1
41.	Field Assistant	12
42.	L.D.C.	2
43.	D.M.O.	1
44.	Dispatch Rider	1
45.	Driver	5
46.	Naib Qasid	8
47.	Guard	4
48.	Helper	4
49.	Gardener	1
50.	Chowkidar	10
51.	Sanitary Worker	5
	Total Posts	136

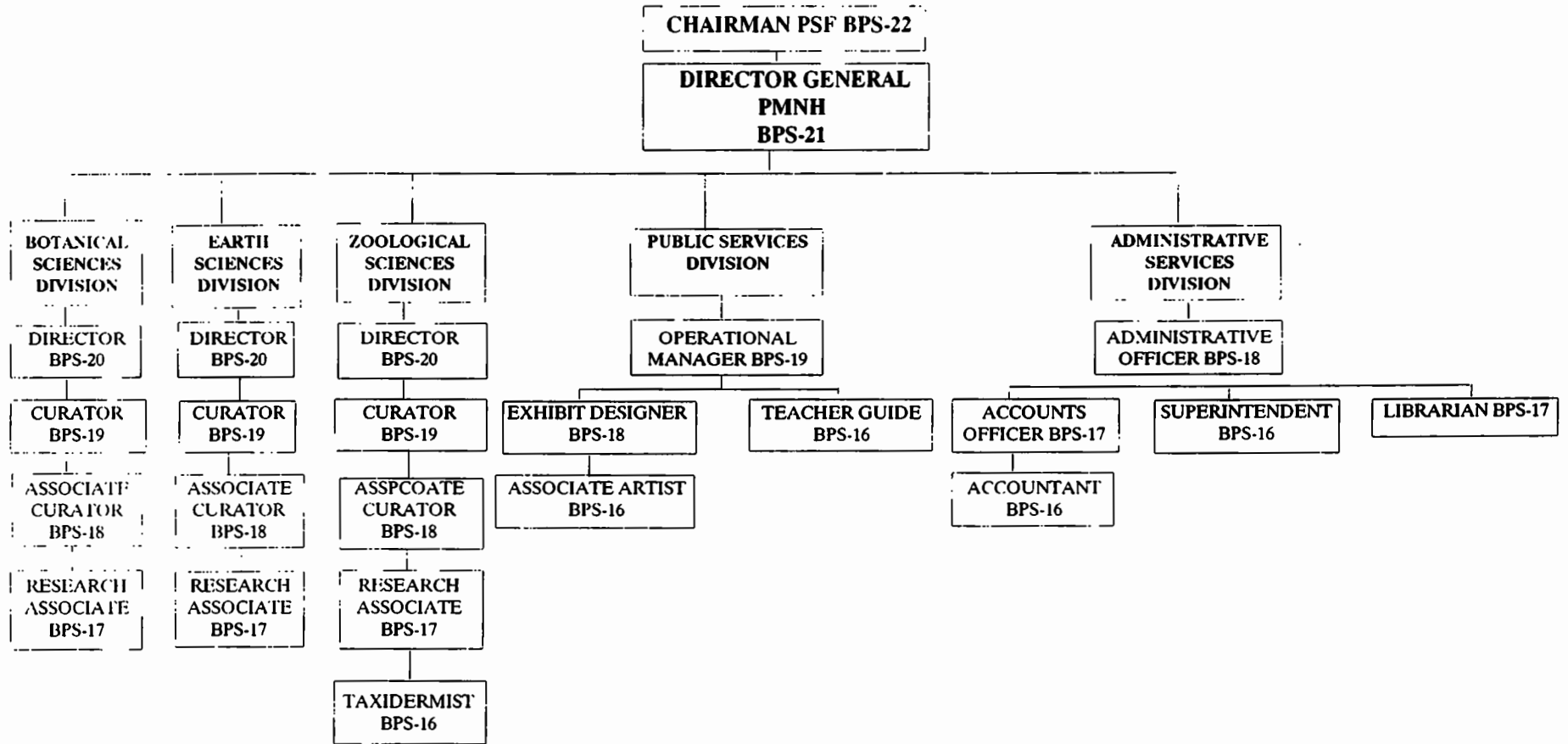
**PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
(PASTIC)**

S.No.	Designation	Number
1.	Director	1
2.	Deputy Director (Doc.)	1
3.	Manager Reprographic Unit	1
4.	Senior Administrative Officer	1
5.	Senior System Analyst	1
6.	Senior Documentation Officer	1
7.	Senior Information Officer	1
8.	Senior Librarian	1
9.	Chief Editor	1
10.	Chief Liaison Officer	2
11.	Scientific Information Officer	3
12.	Admin. Officer (Karachi)	1
13.	Printing Officer	1
14.	Graphic Artist	1
15.	Translating Officer	1
16.	System Analyst	2
17.	Liaison Officer	2
18.	Manager Technology Information	1
19.	Accounts Officer	1
20.	Patent Officer	1
21.	Assistant Documentation Officer	2
22.	Assistant Manager Reprographic Unit	1
23.	Assistant Scientific Information Officer	4
24.	Assistant Programmer	3
25.	Superintendent (Admin.)	1
26.	Superintendent (Reprographic Unit)	1
27.	Accountant	1
28.	P.A. To Director	1
29.	Supporting Staff	91
Total:		130

**PAKISTAN SCIENCE FOUNDATION
ORGANIZATIONAL CHART**

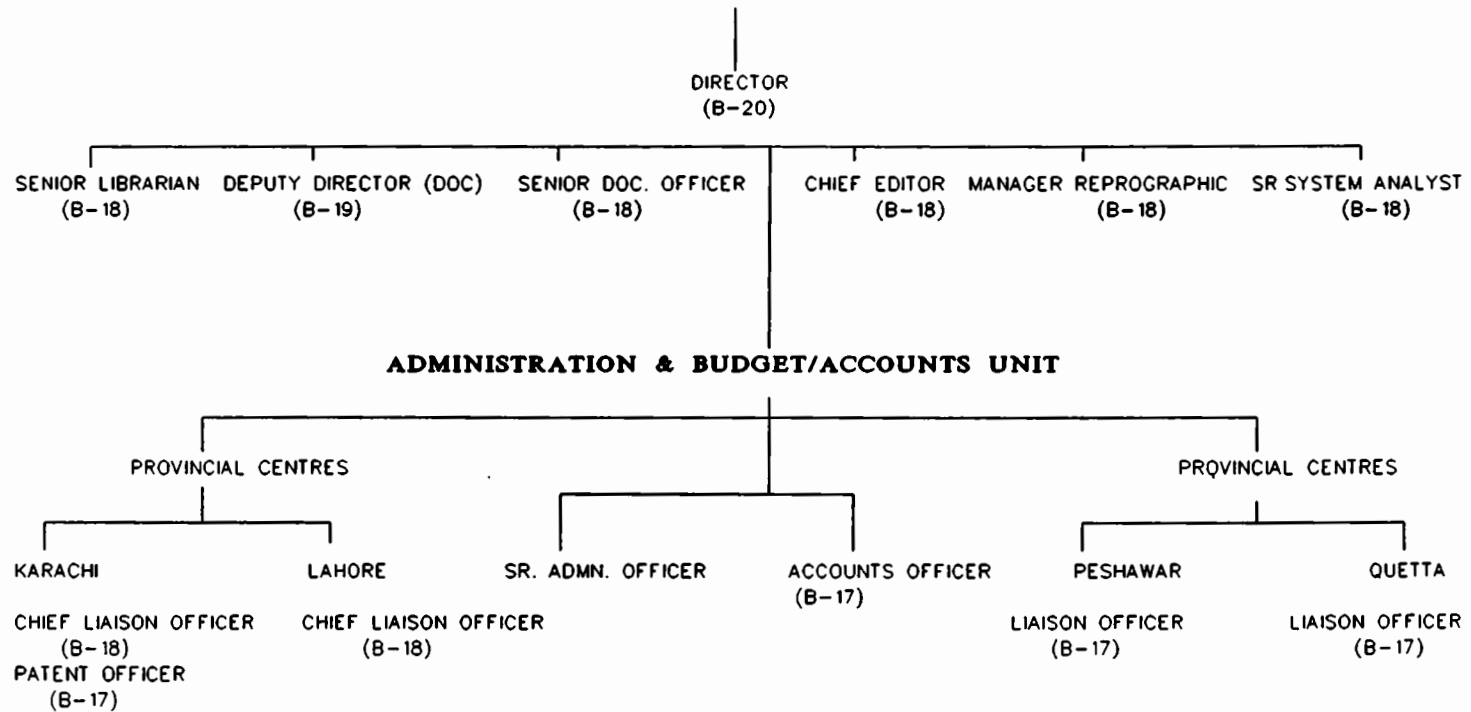


**PAKISTAN MUSEUM OF NATURAL HISTORY
ADMINISTRATIVE CHART**



ORGANIZATION CHART

**PAKISTAN SCIENTIFIC & TECHNOLOGICAL INFORMATION CENTRE
(PASTIC)
ISLAMABAD**



CHAPTER 3

AUDITOR'S REPORT AKBAR & CO., CHARTERED ACCOUNTANTS

AUDITOR'S REPORT

We have audited the annexed Balance Sheet of "PAKISTAN SCIENCE FOUNDATION" as at June 30, 1992 and the annexed Receipts and Expenditure Account for the year ended June 30, 1992 and report that:

- a) We have obtained all the information and explanations which were necessary for our audit;
- b) The Balance Sheet exhibits true and fair view of the state of the Foundation's affairs according to the best of our information and explanations given to us and as shown by the books of Foundation;
- c) The receipts of the Foundation during the year ended June 30, 1992 comprise of grants received from the Federal Government and we are satisfied that grants so received have been utilized for the objects for which these were made within the specified time limit and there were no unspent balance except for expenses incurred but no paid upto June 30, 1992. We are also satisfied of disbursements made from the grants.

**AKBAR & CO
CHARTERED ACCOUNTANTS**

PAKISTAN SCIENCE FOUNDATION, ISLAMABAD
BALANCE SHEET AS ON JUNE 30, 1992

FUND	NOTES	1992	1991	PROPERTY AND ASSETS	NOTE	1992	1991
General Fund	2	6,152,562	6,183,898	fixed Assets (As per Schedule annexure)			
Research Support Grant	3	23,994,400	22,045,241	At cost		8,158,879	8,083,814
				Less: Accumulated Depreciation		3,838,827	2,994,789
				RESEARCH PROJECTS IN PROGRESS		4,875,052	5,089,025
Current liabilities	4	81,453	97,796		5	23,994,400	22,045,241
CURRENT ASSETS							
Account Receivable							
advances Deposits and Prepayments							
				Cash and Bank Balance	6	110,140	105,929
					7	753,487	715,012
					8	495,336	371,728
TOTAL							
						1,358,963	1,192,669
TOTAL:		30,228,415	28,326,935			30,228,415	28,326,935

Note: Notes annexed form an integral part of these accounts

PLACE: LAHORE

CHAIRMAN

TRUSTEE

TRUSTEE

DATE: NOVEMBER 22, 1992

PAKISTAN SCIENCE FOUNDATION ISLAMABAD.

RECEIPTS AND EXPENDITURE FOR THE YEAR ENDED JUNE 30, 1992

Expenditure	.Notes	1992	1991
Grants	9	5,614,336	6,586,660
Development Grants	10	850,000	2,338,000
Travel Grant for Science Survey.	11	71,912	94,755
Other Functions	12	1,018,022	1,415,157
Administrative Expenses	13	8,680,686	7,102,580
Transfer to General Fund A/C	16,234,956	17,537,152	
Less Prior year Adjustment	12,620	---	
Transfer to General Fund Account	16,222,336	17,537,152	

**PAKISTAN SCIENCE FOUNDATION ISLAMABAD
SCHEDULE OF FIXED ASSETS AS ON JUNE 30, 1992**

PARTICULARS	C O S T			RATE	D E P R E C I A T I O N		WRITTEN DOWN VALUE AS ON JUNE.
	AS ON JULY 1, 1991	ADDITION S	AS ON JUNE 30, 1992		AS ON JULY 1, 1991	FOR THE YEAR	
Lease hold land	3,013,919	--	3,013,919		--	--	3,013,919
Furniture and Fixtures	708,511	31,660	740,171	6	291,165	26,940	422,066
Office equipment	1,068,401		1,068,401	15	663,662	60,711	344,028
Air Conditioner	194,974		194,974	15	145,445	7,429	42,100
Motor Vehicles	1,876,490		1,876,490	20	1,270,406	121,217	484,867
Science Equipments	969,833		969,833	15	562,890	61,041	345,902
Library Books and Films	251,006	43,405	294,411	5	60,587	11,691	222,133
Bicycle	680		680	20	634	9	37
1992	8,083,814	75,065	8,158,879		2,994,789	289,038	4,875,052
1991	8,055,726	28,088	8,083,814		2,654,616	340,173	5,089,025

PAKISTAN SCIENCE FOUNDATION, ISLAMABAD
NOTES TO THE ACCOUNTS AS ON JUNE 30, 1992

1. ACCOUNTING POLICIES:

The principle accounting policies which have been adopted in the preparation of Foundations's accounts are as follows:

A GRANTS RECEIVED

Grants from the Government of Psakistan have been accounted for on receipt basis.

B RESEARCH SUPPORT GRANT

Research Support Grant has been accounted for on payment basis.

FIXED ASSETS

1. Fixed assets have been valued at cost less accumulated depreciation except leasehold land
2. which is valued at cost.
3. Depreciation on fixed assets has been charged on reducing balance method.

D GENERAL

Figures have been rounded off to the nearest rupee.

2. GENERAL FUND

Movement during the year is as under:-

Balance as on July	6183,898	6,433,050
Add. Grant received from Government of Pakistan		
Non-Development Grant	15,341,000	14,950,000
Development	850,000	2,338,000
	22,374,898	23,721,050
Less Expenditure	16,222,336	17,537,152
	6,152,562	6,183,898

AKBAR & CO CHARTERED ACCOUNTANTS

	1992 RUPEES	1991 RUPEES
3. RESEARCH & SUPPORT GRANT		
The made up is as under:		
Balance as on July 1	22,045,241	21,930,301
Add: Disbursed during the year (3.1)	4,602,276 647,517	5,559,727 27,490,028
Less: Projects completed during the year (3.2)	2,653,117 23,994,400	5,444,787 22,045,241

3.1 In accordance with the principles out-lined charter grants aggregating Rs. 4,602,276/- have been paid by the Foundation during the year for consulting of various approved scientific research projects as detailed below:-

Medical Sciences	113,400	148,851
Chemical Sciences	830,645	844,165
Agricultural Sciences	1,085,100	563,728
Biological Sciences	954,268	693,324
Earth Sciences	256,109	307,546
Engineering Sciences	59,944	202,524
Physical Sciences	818,334	2,217,984
Institutional Support	314,900	367,400
Board Committee Meeting	91,148	89,874
Math & Computer Sciences	78,428	124,331
	4,602,276	5,559,727

3.2 Project Completed during The Year

Biological Sciences	488,980	872,808
Chemical Sciences	--	2,859,355
Earth Sciences	440,247	439,684
Physical Sciences	2,609	1,272,940
Agricultural Sciences	558,118	--
Mathematical Sciences	375,163--	
Medical Sciences	38,000	--
	2,653,117	5,444,787

4. CURRENT LIABILITIES:

The made up is as under:

Audit Fee Payable 4.1	12,500	27,100
Expenditure Payable 4.2	68,953	44,592
Payable to Contractors	--	6,500
Prior year's Adjustment	--	19,604
	81,453	97,796

4.1 Audit Fee Payable:

The made up is as under:

Akbar & Co.	12,500	12,500
Hussain Ch. & Co.	--	9,000
Nazir Ch. & Co	--	5,600
	12,500	27,100

4.2 EXPENSES PAYABLE:

The made up is as under:

Gas Bill	351	157
Telephone Bill	66,364	44,435
Water	2,238	--
	68,953	44,592

5. **RESEARCH PROJECTS IN PROGRESS** 23,994,400 22,045,241

This represents the expenditure incurred on various research projects which appear contra on liability side under the head "Research Support Grant".

6. **ACCOUNTS RECEIVABLE:**

The made up is as under:

UNESCO Coupons	70,000	105,929
POL Coupons Stock	40,140	--
	110,140	105,929

7. **ADVANCES, DEPOSITS & PREPAYMENTS:**

The made up is as under:

Advance to Staff	14,037	60,088
Deposits	5,500	5,500
Advance Rent	733,950	649,424
	753,487	715,012

8. **CASH AND BANK BALANCES:**

The made up is as under:-

Cash in hand	8.1	25,956	23,292
UNESCO Coupons	8.2	469,380	341,936
National Bank of Pakistan A/C No.52.	--	--	6,500
		495,336	371,728

8.1 Cash in hand was not physically verified by us as on June 30, 1992; however, we have relied upon the certificate provided by the management of its physical existence as on June 30, 1992.

8.2 UNESCO Coupons in hand were not physically verified by us as on June 30, 1992. However, we have relied upon the Certificate provided by the management of its physical existence as on June 30, 1992.

9. **GRANTS**

Research & Support Grant	4,602,276	5,559,727
Scientific Societies		
& Professional Bodies	520,000	560,000
Scientific Conferences,		
Meetings and Seminars	492,060	466,933
Transfer to Expenditure Account:	5,614,336	6,586,660

10. DEVELOPMENT GRANTS

The made up is as under:

1. Chromosome number of Vascular Plants.	--	260,000
2. Operation of Science Caravan	850,000	962,000
3. Construction & Equipment of Science Caravan.	--	1,116,000
	850,000	2,338,000

11. TRAVEL GRANT FOR SCIENTIFIC SURVEY:

Visit of Scientists & Technologists.	71,912	94,755
--------------------------------------	--------	--------

12. OTHER FUNCTIONS:

Science Centre & Herbaria	149,013	387,772
Information & Documentation	58,485	36,201
Awards, Prizes & Fellowships	36,000	40,000
International Liaison	102,165	108,389
Collection of Statistics	--	11,158
Science Promotion Activities.	572,367	831,637
Science Fair	99,992	--
Transfer to Expenditure A/C	1,018,022	1,415,157

12.1 Information & Documentation:

The made up is as under:

Opening Receivable	105,929	85,000
Add: Purchases	150,000	152,436
Opening in hand	341,936	246,630
	597,8655	484,066
Less: Current Receivable	70,000	120,739
Closing in hand	469,380	341,936
	539,380	426,675
Expenses:	58,485	21,391

13. ADMINISTRATIVE EXPENSES

Salaries and other

Benefits 13.1	5,235,583	4,120,615
Travelling Expenses	88,134	112,508
Rent 13.2	1,739,308	1,172,659
Electricity, Gas & Water	140,777	129,123
Postage, Telegrams & Telephone. 13.3	573,987	560,082
Printing & Stationery	68,558	63,809
Vehicle Running and Maintenance.	344,765	371,224
Newspapers & Periodicals	25,674	19,812
Liveries & Uniforms	6,580	12,295
Entertainment	13,862	21,955
Repair and Maintenance	60,657	115,104
Miscellaneous	11,756	10,567
Audit Fee	12,500	50,000
Advertisement	--	1,154
Law Charges	35,680	1,500
Depreciation	289,038	340,173
Repair Car Shed	33,824	--
Transfer to Expenditure A/C	8,680,683	7,102,580

13.1 Salaries And Other Benefits:

The made up is as under:

Salary and benefits	5,182,916	4,094,099
Staff Welfare Fund	10,000	10,000
Adjustment for advance received.	42,667	16,516
	5,235,58	34,120,615

13.2. Rent

The made up is as under:

Balance as on July 1.	649,424	673,000
Paid during the year	1,823,834	1,149,083
	2,473,258	1,822,083
Less: Advance Rent	733,950	649,424
	1,739,308	1,172,659

13.3. Postage, Telegram & Telephone:

Postage and Telegram	29,874	18,045.30
Telephone and Telex	522,184	533,649.40
	552,058	551,694.70
Add: Payable for June	66,364	44,436.00
618,422	596,130.70	
Less: Opening payable	44,435	36,049.00
	573,987	560,081.70

In the end we convey thanks for cooperation extended to us due to which we were in a position to complete the job assigned to us.

AKBAR & CO
CHARTERED ACCOUNTANTS

Accounts officer
Pakistan Museum Of Natural History
Al Markaz
Islamabed F/7.

Dear sir,

Reference your telephonic discussion this is to confirm that we have given the following audit report at the foot of the balance sheet of your museum for the year ended 30 . 6 . 92 for Development Account as Non Development Account.

We have examined the Balance Sheet of "PAKISTAN MUSEUM OF NATURAL HISTORY ISLAMABAD" for the year ended 30th June 1992 together with the income & expenditure account for the year ended 30. 6 . 92 and report that according to the best of our information and explanations given to us, we have found the same to be in order. in accordance with the books of accounts produced to us we are satisfied that the amount of grant shown in the statement of account has been spent on the object for which it was made witin the specified limit. We have also satisfied ourselves about the propriety of the disbursement made from the grant.

Thanking You.

Yours faithfully,

(M HUSSAIN CHAUDHURY & CO)

PAKISTAN MUSEUM OF NATURAL HISTROY -ISLAMABAD
BALANCE SHEET AS AT 30TH JUNE'1992
(DEVELOPMENT ACCOUNT)

CAPITAL AND LIABILITES	AMOUNT RS.	TOTAL RS.	PROPERTY AND ASSETS	AMOUNT Rs.	TOTAL Rs.
Accumulated Fund	36,714,914		FIXED ASSETS (At Cost)	7,912,509	
			Schedule annexed) 1		
Add: Excess of Income Over Expenditure for the year	4,921,450	41,636,364	Work in Progress (Building under construction)	33,722,410	
			CURRENT ASSETS		
			ADVANCE	1,445	41.636,364
		41.636,364			41,636,364

ACCOUNTS OFFICER

ADMINISTRATIVE OFFICER

AUDITOR'S REPORT:

We have examined the Balance sheet of "PAKISTAN MUSEUM OF NATURAL HISTORY -ISLAMABAD (DEVELOPMENT ACCOUNT)" for the year ended 30th June, 1992 to report that according to the best of our information and explanations given to us, we have found the same to be in order in accordance with the books of accounts produced to us. We are satisfied that the amount of grant shown in the statement of account has been spent on the objects for which it was made with the specified limit. We have also satisfied ourselves about the propriety of disbursement made from the grant. Together with the income & expenditure account for the year ended 30.6.92.

53/8 Haider Road,
Rawalpindi
Dated; 26 Jun 1993

M.HUSSAIN CHAUDHRY & CO.
CHARTERED ACCOUNTANTS

M. HUSSAIN CHAUDHURY & CO.
CHARTERED ACCOUNTANTS

53/Haider Road,
RAWALPINDI.

PAKISTAN MUSEUM OF NATURAL HISTROY - ISLAMABAD
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED

30TH JUNE, 1992

(DEVELOPMENT ACCOUNT)

INCOME

1992

RS.

Development Grant

6,000,000

LESS: EXPENDITURES

Pay and allowances

975,556

Display Centre

11,182

Petrol, Oil and Labricant

56,250

Repair and Maintenance of vehicle

14,842

Insurance and Token tax

20,720

1,078,550

Excess of income over expenditure for the year
C/D to balance sheets

4,912,450

ADMINISTRATIVE OFFICER

ACCOUNTS OFFICER

PAKISTAN MUSEUM OF NATURAL HISTROY - ISLAMABAD

FIXED ASSETS AS AT 30TH JUNE, 1992

Note No. 1

PARTICULARS	BALANCE 1-7-91	ADDITION/ (DELITION)	TOTAL AS AT 30-6-92
VEHICLES	827,200	--	827,200
GENERATOR	8,990	--	8,990
LABORATORY EQUIPMENT	6,446,224	52,364	6,498,588
BOOKS	570,903	6,828	577,731
TOTAL	7,853,317	59,192	7,912,509

NOTE No depreciation charged on fixed assets.

PAKISTAN MUSEUM OF NATURAL HISTORY - ISLAMABAD
REPEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 30TH JUNE, 1992
C.D. ACCOUNT NO. 70 U.B.L

RECEIPTS	AMOUNT Rs.	TOTAL Rs.	PAYMENTS	AMOUNT Rs.	TOTAL Rs.
OPENING BALANCE			PAYMENTS DURING THE YEAR		
Cash at United Bank Limited	5,519	5,519	Payment to PEPAC	4,037,336	4,037,336
RECEIPTS DURING THE YEAR			PAYMENTS ON BEHALF OF P.S.F. C.P.F. Loans		
Gratuity received from P.S.F			Gratuity paid to ex- employees	88,136	
C.P.D. Loans from PSF.			Pay to universal Decoraters		
Refund of demurrage Received from P.S.F for Jogging Purposes			CLOSING BALANCES		
			Cash at United Bank Limited	2,803	
Refund received from P.O.L				5,000	95,939
Refund received from C.D.A for project.				7,037	7,037
Refund against purchases	883	4,134,793			
		4,140,312			4,140,312

ACCOUNTANT

ACCOUNT OFFICER

AUDITORS' REPORT:-

We have examined the Receipts and Payments Account of "PAKISTAN MUSEUM OF NATURAL HISTORY ISLAMABAD, C.D.ACCOUNT NO. 70 U.B.L for the year ended 30.6. 1992 and to report that according to the best of our information and explanations given to us, we have found the same to be in order, in accordance with the books of accounts produced to us.

538 Haider Road,
Rawalpindi
Dated;

(M.HUSSAIN CHAUDHURY & CO)
CHARTERED ACCOUNTANTS

PAKISTAN MUSEUM OF NATURAL HISTROY -ISLAMABAD
BALANCE SHEET AS AT 30TH JUNE'1992

M.HUSSAIN CHAUDHURY & CO)
 CHARTERED ACCOUNTANTS

CAPITAL AND LIABILITES	AMOUNT Rs.	TOTAL	PROPERTY AND ASSETS NOTE	AMOUNT Rs.	TOTAL Rs.
Accoumualated Fund	4,460,885		FIXED ASSETS - (AT COST) I		4,451,866
Add: Excess of Income Over Expenditure	128,077	4,588,962	CURRENT ASSETS		
CURRENT LIABILITES			Advance	17,685	
Audit fee payable			Prepaid Rent	116,544	
		6,000	Consumable Store & Stocks	4,614	
			Cash in hand		
				4,253	143,096
		4,596,962			4,594,962

ADMINISTRATIVE OFFICER

ACCOUNT OFFICER

AUDITOR'S REPORT:- Together with the income & expenditute account for the year ended 30.6.92

We have examined the Balance sheet of PAKISTN MUSEUM OF NATURAL HISTORY ISLAMABAD" for the year ended 30th June, 1992 and report that according to the best of our information and explanations given to us, we have found the same to be in order, in accordance with the books of accounts produced to us. We are satisfied that the amount of grant above in the statemnt of account has been spent on the objects for which it was made within the specified limit. We have also satisfied ourselves about the propriety of the disbursement made from the grant.

53/8 Haider Road,
 Rawalpindi.

(M HUSSAIN CHAUDHARY & CO)
 CHARTERED ACCOUNTANTS

DATE: 26 JUN 1993.

PAKISTAN MUSEUM OF NATURAL HISTROY - ISLAMABAD

FIXED ASSETS AS AT 30TH JUNE, 1992

NOTE NO. 1

PARTICULARS	TOTAL AS ON 1-7-91	ADDITION/ DELETION	TOTAL AS AT 30TH JUNE 92
LAND	1,050,000	--	1,050,000
FURNITURE & FIXTURE	950,637	2,190	952,827
OFFICE & LABORA- TORY EQUIPMENT	1,508,612	1,730	1,5109,342
BOOKS	363,302	--	363,302
WHALE & ELEPHANT	25,000	--	25,000
CHEMICAL	114,263	--	114,263
VEHICLES	436,132	--	436,132
TOTAL	4,447,946	3,920	4,451,866

NOTE: No depreciation charged on fixed assets.

M. HUSSAIN CHAUDHURY & CO.
CHARTERED ACCOUNTANTS

53/Haider Road,
RAWALPINDI.

**PAKISTAN MUSEUM OF NATURAL HISTROY - ISLAMABAD
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 30TH JUNE,
1992.**

(NON DEVELOPMENT ACCOUNT)

INCOME 1992
Rs.

Grant from Government 6,174,000

EXPENDITURE

Salaries and allowances 3,899,143
Medical facility 196,358
Over time 19,955
G.P.F Contribution 301,238
G.L.I.Contribution 11,904
Gratuity 194,079
Rent Office Accommodation 531,949
Ground Rent to B.D.A. 10,588
Travelling Expenses 13,379
Repair & Maint Office Equipment 8,849
Electricity, Gas and Water Charges. 223,544
Postage and Telegrams 1,766
Stationery, Printing, Consumable Stores. 56,746
Entertainment Official Meetings 1,705
Telephone Expenses 116,255
P.O.L/Vehicles repair 10,674
Uniform and liveries 2,160
Audit fees 6,000
Advertisement 15,208
Newspaper and Magazines 4,459
Rent Residential Accommodation 412,466
Miscellaneous expenses 7,498

6,045,923

Excess of income over expenditure 128,077

ADMINISTRATIVE OFFICER

ACCOUNT OFFICER

53/8 Haider Road,
Rawalpindi.

(M.HUSSAIN CHAUDHARY & CO)
CHARTERED ACCOUNTANTS

DATE: 26 JUN 1993.

PAKISTAN SCIENCE FOUNDATION ACT 1973

**National Assembly of Pakistan
Islamabad, the 2nd February, 1973**

The following Acts of the National Assembly received the assent of the President on the 31st January, 1973 and hereby published for general information

Act No. III of 1973

An Act to provide for the establishment of the Pakistan Science Foundation.

Whereas it is expedient to provide for the establishment of the Pakistan Science Foundation and for matters ancillary there to,

It is hereby enacted as follows:-

1. **SHORT TITLE, EXTENT AND COMMENCEMENT (I)** This Act may be called the Pakistan Science Foundation Act, 1973.
 - 2) It extends to the whole of Pakistan
 - 3) It shall come into force at once.

2. **DEFINITIONS** - In this Act, unless there is anything repugnant in the subject context.
 - a) 'Board' means the Board of Trustees of the Foundation;
 - b) 'Chairman' means the Chairman of the Foundation; and
 - c) 'Foundation' means the Pakistan Science Foundation established under this Act.

3. **ESTABLISHMENT OF THE FOUNDATION.** (1) As soon as may be after the commencement of this Act, the Federal Government may, by notification in the official Gazette, establish a Pakistan Science Foundation to promote and finance scientific activities having a bearing on the socio-economic needs of the country.
 - 2) The Foundation shall be a body corporate by the name of the Pakistan Science Foundation, having perpetual succession and a common seal, with power, subject to the provision of this Act, to acquire, hold and dispose of property, both movable and immovable, and shall be the said name use and be used.
 - 3) The Head Office of the Foundation shall be at Islamabad.

4. **FUNCTIONS OF THE FOUNDATION.** (1) The Foundation shall function as a financing agency to:-
 - i) the establishment of comprehensive scientific and technological information and dissemination centres;
 - ii) the promotion of basic and fundamental research in the universities and other institutions on scientific problems relevant to the socio-economic development of the country;
 - iii) the utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale;
 - iv) the establishment of science centres, clubs, museums, herbaria and planetaria;
 - v) the promotion of scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline of technology in particular;

- vi) the organisation of periodical science conferences, symposia and seminars;
- vii) the exchange of visit of scientists and technologists with other countries;
- viii) the grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the economy of the country; and
- ix) special scientific surveys not undertaken by any other organisation and collection of scientific statistics related to the scientific effort of the country.

2) The Foundation shall also;

- i) review the progress of scientific research sponsored by it and evaluate the results of such research;
- ii) maintain a National Register of highly qualified and talented scientists of Pakistan including engineers and doctors, in or outside the country and to assist them, in collaboration with the concerned agencies in finding appropriate employment; and
- iii) establish liaison with similar bodies in other countries

3) In the performance of its functions, the Foundation shall be guided on questions of policy by the instructions, if any, given to it by the Federal Government which shall be the sole judge as to whether a question is a question of policy.

5. **BOARD OF TRUSTEES:-** (1) The general direction, conduct and management of the affairs of the Foundation, including administration of its funds, shall vest in a Board of Trustees consisting of the following members namely:-

Whole-time members

- i) the Chairman
- ii) one eminent scientist;
- iii) the Director of Finance: to be appointed by the President;

Part-time members

- iv) the Chairman of the National Science Council;
- v) four scientists to be nominated by the National Science Council; and
- vi) eleven eminent scientists to be nominated by the President

(2) The remuneration and other terms and conditions of service of the Chairman and the two other whole-time members of the Board shall be such as may be determined by the President.

6. **CHAIRMAN OF THE BOARD-** The Chairman of the Board shall be the Chairman of the Foundation and shall be appointed for a term of three years from amongst the eminent scientists of the country having experience of research and scientific administration.

7. **TERM OF MEMBERS OF THE BOARD:-** The members of the Board, other than the ex-officio member, shall hold office for a term of three years and shall be eligible for re-appointment or re-nomination, as the case may be.

8. **MEETING OF THE BOARD.-** (1) The meeting of the Board shall be held at least twice a year and shall be presided over by the Chairman or, in his absence, by its whole-time scientist member. (2) All decisions at a meeting of the Board shall be taken by a majority of the votes of the members present and voting.

9. **QUORUM AT THE MEETING OF THE BOARD:-** To constitute a quorum at a meeting of the Board not less than nine members shall be present.

10. **EXECUTIVE COMMITTEE -** There shall be an Executive Committee consisting of the Chairman and the two whole-time members of the Board.

11. **DELEGATION OF POWERS:-** The Board may, from time to time, delegate the Chairman or the Executive Committee such of its power and functions as it may consider necessary.
12. **ADHOC COMMITTEES:-** The Foundation may set up adhoc committees consisting of university professors and other leading scientists and experts to scrutinize applications for financial assistance for carrying out scientific research submitted to the Foundation by the universities or other institutions or by individual scientific workers or groups of scientific workers and to review and evaluate the results of research sponsored by the Foundation.
13. **FUNDS:-** The funds of the Foundation shall consist of:-\
- a) grants made by the Federal Government and the Provincial Governments;
 - b) donation and edowments; and
 - c) income from other sources;
14. **BUDGET:-** The Foundation shall cause to be prepared and approve a statement of its receipt and expenditure for each financial year.
15. **ACCOUNTS AND AUDIT:-** (1) The funds of the Foundation shall be kept in a personal ledger account of the Foundation with the State Bank of Pakistan or with any Branch of the National Bank of Pakistan acting as an agent of the State Bank.
- 2) The accounts of the Foundation shall be maintained in such form and manner as the Auditor-General of Pakistan may determine in consultation with the Federal Government.
 - 3) The accounts of the Foundation shall be audited by one or more auditors who are chartered accountants with in the meaning of the Chartered Accountants Ordinance., 1961 (X of 1961) and are appointed by the Foundation in consultation with the Auditor-General of Pakistan
16. **APPOINTMENT OF OFFICERS AND SERVANTS:-** (I) The Foundation may appoint such officers and servants and engage such consultants or experts, as it may consider necessary for the efficient performance of its functions, on such terms and conditions as it may deem fit.
- 2) In fixing the terms and conditions of service of its officers and servants. the Foundation shall, as nearly as may be, conform to the scales of pay, allowances and conditions of service applicable to the corresponding class of employees of the Federal Government.
17. **ANNUAL REPORTS.-** (1) the annual report of the Foundation which shall among other things, clearly bring out the benefits accruing to the nation as a result of the activities sponsored by the Foundation, shall be prepared by the Chairman and submitted through the Board to the Federal Government alongwith the audited accounts of the Foundation
- 2) The annual report alongwith the audited accounts of the Foundation shall be laid before the National Assembly.
18. **REGULATIONS:-** The Foundation may make regulations for the efficient conduct of its affairs.
19. **REPEAL:-** The Pakistan Science Foundation Ordinance, 1972 (LII o 1972), is hereby repealed.