

ANNUAL REPORT



**PAKISTAN
SCIENCE
FOUNDATION**

1992-93



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**PAKISTAN SCIENCE FOUNDATION
CONSTITUTION AVENUE ISLAMABAD**

LETTER OF TRANSMITTAL

Dear Mr. Secretary

I have the honour to enclose herewith the Annual Report of the Pakistan Science Foundation for the Fiscal Year 1992-93, alongwith its audited accounts, as adopted by PSF Board of Trustees for submission to the National Assembly as required by the Pakistan Science Foundation's Act No. III of 1973.

With regards.

Yours sincerely,

Dr. Bashir Ahmed Sheikh
Chairman
Pakistan Science Foundation
Islamabad

Secretary,
Ministry of Science and Technology
Government of Pakistan
Islamabad.

PAKISTAN SCIENCE FOUNDATION

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Dr. Bashir Ahmed Sheikh. M.Sc. (Hons) Physiology and Pharmacology, Ph.D. (Physiology) Iowa State University, Ames, Iowa (USA).

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ABBREVIATIONS

Province

B	Balochistan
C	Centre
F	Frontier
P	Punjab
S	Sindh

Sponsoring Institutions

AC	Agricultural College
AU	Agricultural University
EU	Engineering University
QU	Quaid-i-Azam University
KU	Karachi University
HG	Government College, Haripur
PU	Peshawar University/Punjab University
SU	Sindh 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	Oceanographic 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 PSF for the promotion of basic and fundamental research having relevance to the socio-economic needs of the country. During 1992-93, some 148 research projects in various fields remained under consideration for funding. Among these 56 projects costing Rs. 28.95 million were newly received while 92 were carried over from the last year. Out of 148 projects, 27 were sanctioned at an estimated cost of Rs. 8.692 million.

A total grant of Rs. 0.441 million was released as institutional support to six different institutions in the country.

For evaluation of on-going research projects some 40 technical progress reports including semi-annual and annual were received and assessed. After which their grants worth Rs.1.928 million on account of due installments were released. During the year, seven (7) research projects in the fields of Agriculture, Chemistry, Earth Sciences and Medical were completed. The studies included, tissue culture of potato, improvement of salt tolerance in four pulse crops; constituents of medicinal plants of cardiovascular importance; synthesis and application of organotin compounds for pest and disease

control, mineralogy and geochemistry of the Cambrian formations in Salt Range, petrology and geochemistry of Punjab, volcanics in Azad Kashmir and Kaghan valley and byssinosis in workers of cotton industry in Sindh.

In addition, scientific activities were promoted through funding for publication of scientific journals and magazines and holding of conferences by various scientific societies and learned bodies. During 1992-93 a total amount of Rs. 0.980 million was released for the purpose. Participation of Pakistani scientists in international conferences was supported by giving them travel grants. Similarly two Pakistani scientists were supported to visit UK, while two British scientists visited Pakistan under MOU with the Royal Society.

SCIENCE POPULARIZATION:

PSF activities for promotion and popularization of science in the country continued during 1992-93. One of the major activity during the year was organisation of "National Science & Technology Fair-1992 from 17-30 September, 1992 at the Pakistan Sports Complex, Islamabad. In the fair, symposia, aero-modelling competition, cycle race for science and science art painting exhibition were arranged.

Popular science lectures (2) and film (95) and planetarium (117) shows were also organised for a range of audiences. Under another science promotion activity, a set of 10 posters on various science themes were prepared and printed for distribution to schools. Fifth Inter and Intra-Board poster and essay contests respectively were also organised during the period under report. The Foundation also awarded Rs. 10,000/- to Pakistan Association for Computer Education in Schools to be given to the best school team working on computers.

During the year, 25 science clubs were given financial support of Rs. 500/- each and a set of five science books was also sent to them. 1200 solar cookers were purchased out of which 500 cookers alongwith 378 colorimeters were provided to the various clubs in the schools .

Science Caravan is the main science promotion project of PSF particularly in the rural areas. During 1992-93 all three units (Federal, NWFP and Sindh) remained busy in organising science exhibitions and shows etc. in their respective areas. The main events included exhibitions at Galyat, Havelian, Kamra, National S&T Fair 1992 and the exhibition by Pakistan International Space Year Association at Karachi in August, 1992.

PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

The main objective of PMNH is to collect, preserve and identify Natural History specimens and reference collection of plants, animals, rocks, minerals and fossils of the country. As many as 35 field trips were carried out to diverse areas of Pakistan resulting in the addition of some very valuable specimens to the already collected type material.

The PMNH research activities can be gauged from the published work which included 22 research papers and a monograph on "Cryptogamic Flora of Pakistan" during the year 1992-93. The latter was published in collaboration with Japanese counterparts from National History Museum, Tokyo. It was the result of the collaborative project entitled "Cryptogamic Expedition" 1990-92.

The distinction of PMNH lies not only in research but also in implementing a very powerful mass education and public awareness programme through 3 dimensional displays and other visual media, at its Display Corner and Display Centre. More than 150,000 persons visited these two display areas this year.

The designers/artists remained actively engaged in establishing Natural History Section at National Museum of Science and Technology, Lahore. They completed displays/dioramas pertaining to Marine Eco-system, Ocean, Man and Environment, Salt Range etc.

As an education activity nine films on Natural History topics were shown at the Marghazar Display Corner, Islamabad. The films were provided by Science Promotion Section of Pakistan Science Foundation

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

PASTIC is another subsidiary organisation of PSF with the following objectives.

1. To collect, organise, classify and disseminate information in all discipline of Science and Technology to the scientific community of Pakistan.
2. To develop inter-library cooperation for sharing resources.
3. To establish and maintain links with international/regional information networks/agencies.
4. To train information specialists in modern information handling and management techniques.
5. To develop and strengthen the National Science Reference Library.
6. To collect data on S&T information.

PASTIC received 1156 requests for supply of copies of articles and 1409 reprints were supplied. Four bibliographies were prepared and supplied to clients. 325 scientists were supplied current content information. Pakistan Science Abstracts, 1992, 30(1-2) were published. The data of the Union Catalogue of 103 S&T libraries, was fed into the database.

Training on CDS/ISIS was provided to the selected librarians from the country. Software, hardware and desk-top publishing services were provided to other S&T organisations. Under the development project, computer equipment was purchased.

The routine activities under CEHANET, INFOTERRA and ASTINFO Programmes were undertaken which include provision of environmental information, registration of environmental information sources, IDAMS & CDS/ISIS software packages and distribution of publication of these networks.

The National Science Reference Library acquired 729 issues of serials, 40 documents and 95 books.

The reprographic Unit undertook 154 printing jobs for 19 organisations which included composing, offset printing and binding.

The Vol. 5(1-4) of "Technology Information" was published based on technology information from 27 countries.

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.

- | | |
|---------------------------|------------------------|
| 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 |

In 1992-93, 2000 technology/trade offers and requests came from 16 countries and were sent to 375 users in Pakistan. Pakistani entrepreneurs/business organisations submitted information on 840 products/processes/technologies which were advertised abroad through TIPS network.

In 1993 TIPS published its first book on trade and technology information in Urdu language.

INTRODUCTION

The Pakistan Science Foundation was established on June 30th, 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 are broadly divided into four categories:-

- i. Establishment of comprehensive scientific and technological information and dissemination centres.
- ii. Promotion and financing of scientific research in the country and the utilization of the research results.
- iii. Promotion and popularization of 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

1. Research Support
 - a. Grant of Research Projects
 - b. Institutional Support
2. Research Evaluation
3. Scientific Societies/Learned Bodies
4. Exchange of Visits
5. Awards/Fellowships
6. International Liaison
7. Other Activities

B - Science Popularization Section

1. Funding for Conferences/Symposia/Seminars etc.
2. National Science & Technology Fair-1992
3. Popular Science Lectures
4. Science Film/Planetarium Shows

5. Distribution of Scientific Books and Magazines
6. Science Poster Projects
7. Science Poster Contest
8. 5th Intra Board Science Essay Competition
9. Awards
10. Science Clubs Programme
11. Promotion of Science in Rural Areas (Science Caravans)

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 1992-93 is summarized in the following pages.

PAKISTAN SCIENCE FOUNDATION

A RESEARCH SUPPORT SECTION

The progress of the work done by the Research Support Section of the Foundation during the year, 1992-1993 under various statutory functions entrusted to it, is summarised 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 the Country is the main function of the Foundation.

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

- a) Grant for research projects submitted by individuals or groups of scientists in the Universities & Research Institutions in the country.
- b) Institutional Support provision of equipment, literature, staff training facilities, etc. to build institutional capability for conducting research.
- c) Support for participation in regional and international research programmes.

a. Grant of Research Projects Submitted by Individual Research Workers or Group of Scientific Workers:

Research Support is the Principal programme of Foundation for the promotion of basic and fundamental research, having relevance to the socio-economic needs of the country. The details of new projects received and processed for funding by the Foundation are as under:

i) **New Projects:-**

During the period under report, 56 projects costing Rs.28.956 million were received by the Foundation, whereas 92 project proposals which had been at various stages of their processing, were carried over from the previous year. Thus, in all, 148 new project proposals remained under active consideration of the Foundation during the period 1992-93. The proposals were examined by the experts in relevant 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 twenty-seven (27) projects were sanctioned at an estimated cost of Rs.8.692 million. The 1st instalments amounting to Rs.4.817 million have been released for the initiation of project work as detailed below:

No. & Title of Scheme:	Name of P.I. & Organization Supported;	Project Cost.
AGRICULTURAL SCIENCES;		
Fate of Nitrogen 15-Urea in Soil-Plant System as Influenced by nitrification Inhibitor. F-AU/Agr (121)	Dr. Zahir Shah, Assistant Professor, Department of Soil Sciences, NWFP Agricultural University, Peshawar.	Rs.3,75,000/-
Application of Molecular Approach towards Biological Nitrogen Fixation (BNF) in Azad Kashmir. AJK-UCR/Agr (126)	Dr. Dilnawaz A. Gardazi, Assistant Professor, University College of Agri., Rawalakot, A.K.	Rs. 4,447,652/50
Fish as a Bio-indicator of Fresh Water Contamination by Metals. F-AU/Agr (128)	Dr. Muhammad Javed, Assistant Professor, Department of Zoology & Fisheries, University of Agriculture, Faisalabad.	Rs.5,37,024/-
Utilization of Intraspecific and Alien Genetic Variation for Inducing and Enhancing Salt Tolerance. S-AEARC/Agr (131)	Dr. Khushnood A. Siddiqui, Director, Atomic Energy Agricultural Research Centre, Tandojam.	Rs. 3,41,920/-
Soil Management and Alfalfa Production in Azad Kashmir. AJK-UCR/Agr (132)	Dr. Mohammad Ilyas, Assistant Professor, University College of Agri., Rawalakot, A.K.	Rs.3,75,111/-
Modeling Integrated Control for Maize Smuts in the NWFP. F-AU/Agr (133)	Dr. Shabeer Ahmed, Assistant Professor, Department of Plant Pathology, NWFP Agricultural University, Peshawar.	Rs. 3,48,238/-

Taxonomic Studies on Grasshoppers and Locusts (Agridoidea: Orthoptera) of Pakistan. P-AU/Agr (134) Dr. Muhammad Yousaf, Professor, Department of Entomology, University of Agriculture, Faisalabad. Rs.1,06,580/-

Genetic Variation in the Morphological Characteristics, Chemicals Composition and Rumen Digestibility of Wheat straw Cultivars Grown in NWFP. F-AU/Agr (135) Prof. Syed Basit Ali Shah, Dean, Faculty of Animal Husbandry & Veterinary Sciences, NWFP Agricultural University, Peshawar. Rs. 2,35,590/-

Use of Rhizobium Biofertilizer for Increasing Production of Food Legumes. P-NIBG/Agr (136) Dr. Fauzia Yusuf Hafeez, Senior Scientific Officer, National Institute for Biotechnology and Genetic Engineering, Jhang Road, Faisalabad. Rs.4,18,863/-

BIOLOGICAL SCIENCES

Studies on Plasmid Associated Bacteriocin Production by Lactobacilli. S-KU/Bio (186) Dr. Roqaya Siddiqui, Assistant Professor Department of Microbiology, University of Karachi. Rs.2,50,563/-

Biodegradation of DCP & TCE by Tobacco. P-PU/Bio (204) Dr. Zahoor Ahmed, Assistant Professor, Centre for Advance Molecular Biology, University of the Punjab, Canal Bank Road, Lahore. Rs.3,82,143/-

Seaweed Fauna of Karachi Coast. S-KU/Bio 205) Dr. Naseem Ghani, Senior Taxonomist, Marine Reference Collection Centre, University of Karachi, Karachi. Rs.1,93,698/-

Isolation and Characterization of Cytokinin Mutants of *Arabidopsis thaliana*. P-BZU/Bio (211) Dr. Javed Iqbal Mirza, Assistant Professor, Institute of Pure & Applied Bio., Bahauddin Zakariya University, Multan. Rs.2,12,945/-

CHEMICAL SCIENCES

Pharmaceutical Investigation on <i>Cannabis sativa</i> L. P-PU/Chem (215)	Dr. M. Ashraf, Professor, Department of Pharmacy, University of Punjab, Lahore.	Rs.2,77,291/-
Microbial Transformation (Bio transformation) of Natural Antitumor Agents. S-KU/Chem (218)	Prof. Dr. Atta-ur-Rahman, Director, H.E.J. Research Institute of Chemistry, University of Karachi, Karachi.	Rs.4,08,530/-
Relationship Between Blood Lead & Lead in Air, Water and Dust in Peshawar, Mardan & Nowshera Cities. F-PR/Chem (223)	Dr. M. Rasul Jan, Assistant Professor, Department of Chemistry, Peshawar.	Rs.87,234/-
Role of Proteins in Salt Tolerance in Mangroves and its Ecological Significance. S- KU/Chem (224)	Dr. Atiya Abbasi, Assistant Professor, H.E.J. Research Institute, University of Karachi, Karachi.	Rs.3,96,920/-
Synthesis, Spectroscopic Studies and Biological Activity of Novel Heterocyclic Compounds having five or seven Membered Ring Systems. C-QU/Chem (226)	Dr. Mrs. Roshan Ahmed, Professor, Department of Chemistry, Quaid-i-Azam University, Islamabad.	Rs.2,97,230/-
Isolation & Characterization of Flavonoids having Potential Agricultural Applications. C- QU/Chem (235)	Dr. Aurungzeb Hassan, Department of Chemistry, Quaid-i-Azam University, Islamabad.	Rs.2,37,156/-
Isolation of Cytotoxin Compounds from Marine Animals. S-KU/Chem (236)	Dr. Rashida Qasim, Associate Professor, Department of Bio- Chemistry, University of Karachi, Karachi.	Rs.6,82,782/-
Study of Lipids and Apolipoproteins Abnormalities in Coronary Artery Disease. P- PMRC/Chem (244)	Dr. Fayyaz-ud-Din, Principal Research Officer, Fatima Jinnah Medical College and Ganga Ram Hospital, Lahore.	Rs.1,05,750/-

Potential Aggregation Inhibitory Activity of Indigenous Medicinal Plants. F-GU/Chem (243)	Dr. Karamat A. Javad. Professor, Department of Pharmacy. Gomal University, D.I.Khan.	Rs.87.536/-
Impedence Spectroscopic Studies of high Tc. Superconductor Ceramics at Superconducting State. C-QU/Chem (246)	Dr. Mahmood Mohammad. Professor, Department of Chemistry, Quaid-i-Azam University, Islamabad.	Rs.9.00,216/-
Study of Enzyme Activities and Isoenzyme Patterns in Lung Cancer S-JPMC/Chem (254)	Prof. Dr. Abdul Baseer. Chairman, Department of Biochemistry, JPMC, Karachi.	Rs.2.07.150/-

PHYSICAL SCIENCES:

A study of the Coherence Properties of Radiation in Laser and Quantum Optics. C-QU/Phys (67/1)	Dr. M. Suhail Zubairy. Chairman, Department of Electronics, Quaid-i-Azam University, Islamabad.	Rs.1.36,935/-
Hard Processes in Nuclear/ Particle Physics. C-QU/Phys (85)	Dr. Pervez Qamir Ali Hoodbhoy. Professor, Department of Physics, Quaid-i-Azam University, Islamabad.	Rs.2.76.746/-
Characterization of Radiation Induced Defects in Semiconductor. C-QU/Chem (87)	Dr. Mrs. Nasim Zafar. Associate Professor, Department of Physics, Quaid-i-Azam University, Islamabad.	Rs.3.64.996/-

b. Institutional Support:

An amount of Rs.4.41.000/- was released to the following six (6) Institutes/Departments of the Universities and Colleges on account of "Institutional Support Grant" for the purpose mentioned against each:

<u>NAME OF INSTITUTE/ DEPARTMENT:</u>	<u>PURPOSE OF GRANT</u>	<u>AMOUNT</u>
University of Engineering & Technology, Lahore.	Purchase of a Computer	Rs.1,00,000/-

Department of Physiology, University of Agriculture, Faisalabad.	Purchase of PC Microprocessor	Rs. 45,000/-
Department of Physics, Gomal University, D.I.Khan.	Purchase of Computer on line with MCA.	Rs. 45,000/-
Department of Physics, University of the Punjab, Lahore.	Purchase of Nuclear Laboratory equipment.	Rs. 25,000/-
Institute of Chemistry, University of Sindh, Jamshoro.	Purchase of Eyela UV detector	Rs.1,26,000/-
Department of Physics, University of AJK, Muzaffarabad.	Purchase of Laboratory Equipment.	Rs.1,00,000/-
Total:		Rs.4,41,000/-

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-four (24) 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 instalment. The particulars of these reports are as under:-

<u>PROJECT NO:</u>	<u>PROJECT TITLE:</u>	<u>REPORT:</u>
S-AU/Agr (90)	Pathogen-free Potato Plant Regenerated from Meristem Tip cultures.	3rd Semi Annual
P-CSIR/Agr (95)	A survey of Toxigenic Fungi in Agriculture Commodities.	3rd Semi Annual
P-NIAB/Agr (97)	Development of Short Saturated Varieties of Basmati Rice.	Ist Semi Annual
F-AU/Agr (107)	Effect of Foliar Application of Micronutrient in Combination of Urea on the yeild and Fruit Quality of Sweet Oranges.	Ist Semi Annual

F-AU/Agr (109)	Utilization of salt Effected Soils.	2nd Semi Annual
F-GU/Agr (113)	Studies on the Improvement of Physio-chemical Characteristics of Soils through Legume Crops in Dera Ismail Khan.	Ist Semi Annual
F-AU/Agr (114)	Development of Normal & Therapeutic Diet Sheet for Pakistan Population.	Ist Semi Annual
F-AU/Agr (116)	Evolution of early maturing Cotton varieties Suitable for D.I.Khan Zone.	Ist Semi Annual
S-KU/Bio (170)	Plasmid of Gram Positive Cooci as Tools for Genetic Engineering.	2nd Semi Annual
AJK-UCR/Bio (178)	Exploratory Survey of Nodulated Wild Plants Carrying on Atmospheric Nitrogen Fixation in Forest Area of District Poonch (Rawalakot) A.K.	2nd Semi Annual
S-KU/Bio (183)	Echinoderm Fauna of Karachi (Sindh Coast).	Ist Semi Annual
P-BZU/Bio (189)	Improvement of Salt Tolerance in Sunflower (<i>Helianthus annus L.</i>) by selection and Breeding.	Ist Semi Annual
C-QU/Bio (192)	Role of Follicle Stimulating Hormone (FSH) on Gonadal Function in the Immature Monkey: Specific & Synergistic Effects.	Ist Semi Annual
S-KU/Bio (194)	Studies on Mass Production of Bio control agnet for Field Application & Plant Disease Control.	Ist Semi Annual
S-KU/Bio (201)	Echophysiology of Indus Delta Mangroves.	Ist Semi Annual
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.	2nd Semi Annual
P-CSIR/Chem (219)	Process Development for the Manufacture of 6-amino <i>Pencillanic Acid</i> (6-APA) from Pencillin G.	Ist Semi Annual

P-PU/Chem (208)	Evaluation of Trace Elements and Aerosols in Air and Their Effects on Urban Environment of Punjab Area in Pakistan.	2nd Semi Annual
C-PMNH/Earth (38)	Mineralization and Petrogenetic Study of Rocks along the Indus Suture Zone.	2nd Semi Annual
C-QU/Phys (69)	Wave Propagation & Transport Phenomenon in Controlled Fusion.	3rd Semi Annual
C - QU /Phys (73)	Weak Interactions in a Medium and their Implications in Astrophysics/ Cosmology	2nd Semi Annual
KU/Phys(74)	Optical Studies of lipid crystals.	2nd Semi Annual
C-QU/Phys(780)	High Resolution Studies of Atoms and Molecules.	2nd Semi Annual
C-QU/Phys(79)	Characterization Modelling & Simulation of Semi-Conductor/ Superconductor Device.	Ist Semi Annual

b) Ist Annual Reports.

As many as fifteen (15) Ist annual, and one (1) 2nd annual reports in respect of following on-going projects were received by the Foundation, during the report period:

<u>PROJECT NO:</u>	<u>PROJECT TITLE</u>
P-NIAB/Agr (97)	Studies on Genetical and Physiological Traits of Short Saturated Mutants of Basmti Rice <i>Oryza sativa</i> .
S-AU/Agr (106)	Isolation and Typing of Various Strains of <i>Streptococcus thermophilus</i> & <i>Lactobacillus bulgaricus</i> from Local Dahi Samples and their effects on Various Physio-chemical properties of milk during fermentation.
F-AU/Agr 9107)	Effects of Foliar Application of Micronutrient in Combination of Urea on Yield and Fruit quality of Sweet Oranges.
F-GU/Agr (109)	Utilization of Salt Affected Soil.
F-GU/Agr 9116)	Evolution of Early Maturing Cotton Varieties Suitable for D.I. Khan.

- P-PU/Bio (172) Termites of Desert Zones of Pkistan.
- AJK-UCR/Bio (178) Exploratory Survey of Nodulated Wild Plants carrying on Atmospheric Nitrogen Fixation in Forest Area of Distt. Poonch A.K.
- S-KU/Bio (181) Systematic Distribution of the Flavonoids in Papilionoideae.
- S-KU/Bio (183) Echinoderm Fauna of Karachi/Sindh Coast.
- S-KU/Bio (200) Combined Effect of VAM-fungi and Rizobium for increasing Growth and yield of Soya bean.
- C-PMNH/Earth (38) Mineralization and Petrogenetic Study of Rocks along Indus Suture Zones.
- P-CSIR/Chem (219) Process Development for the Manufacture of 6-Amino Pencillanic Acid (6-APA) from Pencillin G.
- C-QU/Phys (69) Wave Propagation and Transport Phenomenon in Controlled Fussion.
- S-KU/Phys (72) Electronic Spectra of Diatomic Molecules.
- S-KU/Phys (74) Optical Studies of Liquid Crystals.

c) **2nd Annual Report:**

Project No:-

Project Title:-

- P-PU/Chem (208) Evaluation of Trace Elements and Aerosols in Air and their effects on Urban Environment.

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 the respective Technical Committee for consideration and acceptance. The remarks of the Technical Committees, if any, were conveyed to the Principal Investigators of the projects for requisite action.

d) **Grants Released for On-Going Research Projects:**

Research grants totalling to Rs.1.928 million were released on account of various instalments in respect of the on-going projects mentioned in subpara (a), (b) and (c) above, after their technical and fiscal evaluation.

ii). Completed Projects:

Final Reports of Seven (7) 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.

Final Reports:

PROJECT NO:	PROJECT TITLE:	REPORTS
S-AU/Agr (90)	Pathogen-Free Potato Plant Regenerated from Meristem-Tip Cultures.	Final
P-BZU/Agr (93)	Improvement of Salt Tolerance in Some Important Pulse Crops.	Final
S-KU/Chem (186)	Pharmacological Studies of the Constituents of Medicinal Plants of Cardiovascular Importance.	Final
C-QU/Chem (204)	Synthesis and Application of Organotin Compounds for Pest and Disease Control.	Final
S-PMNH/Earth (30)	Mineralogy and Geochemistry of Cambrian Formations in Salt Range.	Final
AJK/Earth (33)	Petrology & Geochemistry of Punjab Volcanics in Poonch, Muzaffarabad.	Final
S-JPMC/Med (98)	Byssinosis in Cotton Industry of Sindh.	Final

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

Project No:- S-AU/Agr (90)

Project Title: Pathogen-Free potato Plant Regenerated from Meristem-Tip Cultures.

In Pakistan the Potato cultivars grown from local seed are usually affected by virus diseases which is seed borne. Healthy and disease free seed is imported at the expense of heavy foreign exchange. Meristem-tip culture technique has been used effectively for the eradication of potato viruses.

The present study was undertaken to develop technique for the regeneration of pathogen-free plants from meristem-tips of potato cultivars in vitro. To achieve this objective meristem-tips of four potato cultivars were cultured aseptically in agar medium of MS inorganic salts with thiamine HCL, supplemented with NAA and GA3. The

medium supplemented with NAA produced 60 to 80 percent plantlets with both root and shoot formation, while GA3 suppressed bud proliferation and induced root regeneration. Vegetative multiplication was continued by successive sub-culturing of each node of regenerated plant on the same medium with 2% sugar. However, the following significant findings have been made during the study:

- Micro-tuber of potato have been obtained in vitro.
- Vegetative multiplication of potato cultures have been done successfully through internode cuttings in vitro.
- Callus have been induced in potato tissues and well maintained.
- Plantlets have been obtained with shoot-apex of Banana.
- Root, shoot and callus have been initiated from different explant material of different crops and plants.

Presently more than 300 cultures are maintained in the tissue culture laboratory. Callogenesis has also been initiated and maintained from the potato ex-plant. The acquaintance with different tissue culture techniques used with different crops including potato have been achieved during the project, which would help the future work including the transfer of potato plantlets from laboratory to the field conditions and making observations of plants in the fields.

Project No:- P-BZU/Agr (93)

Project Title:- Improvement of Salt Tolerance in Some Important Pulse Crops.

Salinity remains one of man's oldest environmental problems. In Pakistan it has caused substantial adverse social and economic problems, such as, poor living standards in affected areas, health problems for animals and humans, the crumbling of mud and brick houses and difficulties in transport. Many people are being forced to migrate from salt affected and dry areas to other areas because agriculture is totally abandoned in these areas.

Presence of variation for salt tolerance is a prerequisite for the improvement of any character. During these studies screening of available germplasm of crop species regarding the extent of variation for the desired character was carried out and exotic germplasm of four pulse crops i.e. lentil, chick pea, mungbean and pigeon pea were screened. 133 accessions of lentil (*Lens culinaris medic*), 32 of Chick pea (*Cior arietinum*), 27 of mungbean (*Vigna radiate (L.) wilezek*) and only 3 of pigeon pea (*Cajanus Cajan (L.) Mill.*, were screened at three growth stages. In case of lentil a great magnitude of variation for salt tolerance was observed in this species at both the growth stages. However, two accessions ILL 6451 and ILL 6788 were consistently superior to all

the remaining accessions studied at all growth stages including grain yield. The greater salt tolerance of these accessions was associated with the inclusion of Na and Cl in their leaves.

32 accessions of chick pea (*Cicer arietinum*) were screened at three growth stages as of lentil. Two accessions CM 663 and 10572 were consistently tolerant at all growth stages as compared with all the remaining accessions tested. Both the salt tolerant accessions also accumulated high concentrations of both Na and Cl in the shoots as was observed in the salt tolerant accessions of lentil.

Twenty seven accessions of mungbean (*Vigna radiata* (L.) *wilezek*) were screened at the three growth stages i.e. germination, seedling and adult stage. Two accessions pak 45600 and Pak 45603 found relatively salt tolerant in biomass production and seed yield. Both accessions also were found accumulators of Na and Cl in the shoots as was observed in lentil and chick pea.

Only three accessions of pigeon pea (*Cajanus cajan* (L.) *mills*) were screened at three development stages. One accession i.e. ICPL 151 was the most salt tolerant of all accessions examined. But the tolerance of this accession was associated with its ability to exclude both Na and Cl from its shoots.

Estimation of components and genetic variation, such as additive dominance and epistasis is crucial to devise and appropriate breeding programme for improvement of salt tolerance. 2 salt tolerant and 2 salt sensitive accessions of pigeon pea were crossed following a diallel crossing design. Only additive effect was observed to be significant which suggests that a significant advance in salt tolerance of pigeon pea is expected through vigorous recurrent selection.

For the genetic studies in lentil, chick pea and mungbean pair crosses were made between one salt tolerant and one salt sensitive accession. Additive and dominance components of variation were estimated using additive dominance model. High additive and dominance components were observed in lentil and mungbean, whereas in chick pea only additive effect was found high.

Finally, improvement of salt tolerance in chick pea and lentil was carried out through selection and breeding. 5000 seeds of variable material of lentil and chick pea were screened in salinized solution culture at 70 and 100 mol m³ NaCl respectively, and a selection intensity less than 1% was attained. The selected lines of both the species considerably excelled the unselected lines in seed yield and yield components.

The results of this study clearly show that a significant improvement can be made to increase agricultural production through repeated cycles of selection, since a great magnitude of genetic variation is available in gene pool of all four pulse crops examined.

Project No:- S-KU/Chem (186)

Project Title:- Pharmacological studies of the Constituents of Medicinal Plants of Cardiovascular Importance.

Summary of the Work done:-

During the report period pharmacological activities of 35 constituents (crude, extract, aqueous, n-butanolic acetate fractions and pure compounds etc.) of 27 plants were evaluated with various techniques.

Out of 35 plants constituents 12 were cardiotoxic (positive inotropic effect) 12 were cardio depressent, 2 showed biphasic and one was either inactive or showed biphasic effect, i.e. first increase in forms of contraction and then a decrease or vice versa and eight (8) were inactive.

Apart from these constituents from herbal source some of the standard drugs were also used and evaluated for the comparison and determination of the mode of action for these extracts. These drugs are Adrenaline, Noradrenaline, Acetylcholine, Dopamine, Quinidine, Clonidine prazosine, Verapamil and propranolol.

Though these results are of preliminary nature but clearly show the effectiveness of the herbal extracts on cardiac and cardiovascular parameters. The mode of action of some interesting plants indicate that a coordinated attempt i.e. primary, secondary and tertiary phases of their pharmacology and toxicology may produce some very interesting and clinically useful drugs.

The folkloric use of crude drugs is often empirical and is based on observations from clinical trials without experimental support. This study may be a stepping stone towards providing an authentic experimental support for these folkloric medicine for their safe and wider use. But still the need for an indepth systematic investigation into the use of indigenous cannot be over emphasized.

Project No: C-QU/Chem (204)

Project Title: Synthesis and Application of Organotin Compounds for Pest and Disease Control.

Summary of Work done:-

During this project of one year duration organotin complexes of general formula $R_3 SnL$, R_2SnL_2 and R_2SnLCl where $L = 1$ -notroseo-2-naphtol, $R = C_6H_5$, $C_6H_5CH_2$, $N-C_4H_2$, CH_3 and C_6H_{11} have been synthesized.

Characterization of these complexes were carried out by infrared, mass NMR and thermal studies. The infrared spectra of the synthesized complexes were compared with their precursors to confirm the complexation. The NMR spectra of the ligand and synthesized complexes were taken in deuterated solvents and the intensity and multiplicity of the signals were recorded. Mass spectra for a number of complexes and thermograms for some compounds have been received from Bayreuth University, Germany, where as some of the results are still awaited.

Biological activity of some of the complexes was investigated against various species of Bacteria. The preliminary results have shown that some of the synthesized complexes have activity against bacteria such as: *Staphylococcus aureus*, *Salmonella typhae*, and *Bacillus subtilis*. Quantitative investigations are underway.

Project No:- C-PMNH/Earth (30)

Project Title:- Mineralogy and Geochemistry of the Cambrian Formations in Salt Range.

Summary of the Work done:-

The Cambrian formations named as the Khewra Sandstone, Kussak Formation, Jutana Dolomite and the Baghanwala Formation were investigated in field during these studies to know their relations with the overlying and the underlying formations. The reconnaissance survey of about 300kms. was conducted to select the best geological sections for the stratigraphical studies of the cambrian rocks in the eastern, central and western Salt Range. The geological sections of the Cambrian rocks were measured at eight selected locations to understand the regional stratigraphical variations. About 1153 major beds and 11431 total beds were investigated in field to understand the lithological variations of the Cambrian rocks exposed in the Salt Range. The Khewra sandstone conformably overlies the Salt Range Formation with occasional local disturbances and may be divided into three sub-units. The Kussak Formation disconformably overlies the Khewra Sandstone and may be divided into four units on the basis of its lithology and bedding characters. The Jutana Dolomite conformably, overlies the Kussak Formation and may be divided into two units. The Baghanwala Formation conformably overlies the Jutana Dolomite and may be divided into three units. The Baghanwala Formation is unconformably overlain by the Tobra Formation of Permian age.

The samples were collected from the Cambrian formations exposed at Ludwah hills and the megascopic studies of about 525 samples, the sedimentological studies of 193 samples, the petrographic studies of about 202 samples, the chemical analyses of about 67 samples and the X-ray diffraction studies of about 201 selected samples were conducted to understand the palaeo-environments and any economical exploitation.

The petrographic studies have proved that the Khewra Sandstone is a chemically mature sandstone. The sandstone was deposited in deltaic environments, representing the topset, the forest and the bottom set deltaic sequences, represented as units C, B and A, respectively. Economically, its upper and middle units are good reservoirs for water, oil and gas due to their high porosity. The upper unit sands exposed at Ludwah may also be used as glass sands. The Khewra sandstone represents the regression of the Cambrian sea. The Kussak Formation was deposited in intertidal to supratidal and subtidal environmental conditions, representing chemically matured beach sands, supratidal lagoonal deposits, the subtidal sands and the carbonates. The Lagoonal clays/shales consist of comparatively high potassium and may be used as potassium fertilizers after enrichment. The Kussak Formation represents the transgression of the Cambrian sea. The Jutana Dolomite is a secondary dolomite and was deposited in the intertidal to subtidal conditions with occasional supratidal conditions. The Jutana Dolomite shows primary and secondary porosity and may be a reservoir for water oil and gas. The dolomite is often of high grade and may be used in steel industry. The Baghanwala Formation was deposited mostly in supratidal conditions, representing mostly lagoonal shales, clays silts and carbonates. The Baghanwala Formation represents an argillaceous unit and seals the reservoir rocks lying below it and may be called a cap rock for the Cambrian reservoirs. The Baghanwala Formation represents the regression of the Cambrian sea.

The detailed field sedimentological, geochemical and petrographic studies carried out under this project have revealed that the Cambrian formations were deposited in an intracratonic depositional basin, formed due to rifting.

Project No:- AJK/Earth (33)

Project Title:- Petrology & Geochemistry of Panjal Volcanics in Poonch, Muzaffarabad and Kaghan Valley.

Summary of Work done:-

Geological mapping was carried out right from Kahuta (in Poonch now Bagh District), Muzaffarabad (from Chamn in Jhelum Valley to Kaghan watershed) to Kaghan Valley (in NWFP). The geological mapping was carried out on 1:50,000 scale and the maps are reduced to handy presentable form. Composite map of the entire exposures and surrounding rocks is also presented on 1:250,000 scale as a requirement of the project. Thus a new and detailed geological map of the Panjal volcanics is presented for the first time. Five sections were measured, to establish stratigraphy of the Panjal volcanics in particular.

Geology of the entire area is reinterpreted in terms of stratigraphy, structure, geochemistry and magma type. The occurrence of Hazara Kashmir Syntaxis of Western Himalaya around project area form a great anticlinal structures with extensive imbrication and the Cambrian unconformity (with bauxite/laterite, phosphorite and cherty clasts) which merged with the Late Cretaceous Prepalaeocene unconformity of Muzaffarabad and

Kotli areas. The second Paleozoic unconformity is between Dograslate and Gondwana Group in Kahuta area of Pre-Carboniferous times. The third unconformity is between Kuldana Formation and Murree Formation.

The major structural features which dominate all along the eastern limb of the Hazara Kashmir Syntaxis are the Main Boundry Thrust (M.B.T.) and the Panjal Thrust and not the Main Central Thrust (M.C.T.) as indicated by Greco (1989). In our views the M.C.T. occurs near Sharda and joins the M.C.T. of Choudhry and Ghazanfar (1990) near Battal in Kaghan Valley.

136 petrographic analyses have helped a lot to understand the Panjal Volcanic rocks now as regards to major and minor minerals towards their alteration and origin.

Geochemistry of III Panjal volcanic rocks reveal that the rocks are tholeiitic. The tholeiitic character of these rocks represent that the Panjal magma was derived by extensive partial melting of the mantle material. Extensive partial melting of the mantle material is further supported by the absence of the ultramafic members and very low values of Ni and Co in the Panjal volcanics. The plots of the Panjal volcanics on discriminant diagrams for the tectonic setting indicate that the lava erupted in submarine to continental conditions. The eruption of the Panjal lava occured in two phases. First of all agglomerates were formed while with the opening of geogracture a shallow ocean basin was developed alongwith deposition of pillow basalts with bedded chert, jasper and intertrappean limestone. Small lensoid bodies and showings of lead, zinc and copper have been found so far associated with Panjal volcanics near Jhugian and Bandi Gorsian.

Project No:- S-JPMC/Med (98)

Project Title:- Byssinosis in Cotton Industry of Sindh.

Summary of the Work done:-

Byssinosis is a chronic disabling disease amongst the cotton workers in the mill. The disease is due to the inhalation of cotton dust and has a world wide distribution. It occurs in people involved in handling of cotton fiber in factory and also amongst those who live in the vicinity spread around the cotton and ginning factories.

During the report period one cotton mill in Karachi and five (5) mills in Mirpurkhas, Sindh were examined to determine the prevalence of Byssinosis. A total number of 243 workers in cotton mill, and 310 in the ginning factores were examined as study cases.

Textile Mill Workers:- These studies have revealed that average age amongst the 243 cotton mill workers studied was 36 years. All were males barring 20 females. 39% were smokers, some used "Gul" a mixture of Ash and Tobacco. A total of 24% were symptomatics and amongst the symphthomatics the percentage of smokers was higher

being 45%. Due to unsettled conditions which delayed visits to the mill some times for weeks many workers were lost who either changed their job or left Karachi. hence only 135 of the total completed the protocol. Amongst these 33 complained of symptoms and 3 amongst symptomatics of byssinosis majority had chronic cough with sputum. 60% of these had normal pulmonary function test, while 20% had moderate fall in the functions.

Ginning Factories Workers: Out of 310 workers examined 34 were excluded because of other chronic chest diseases, of the remaining 276 smokers were 42%. Ninety eight (36%) were symptomatic, 24 amongst these had typical symptoms of byssinosis. History of smoking was more prevalent amongst byssinotics (63%) compared to other symptomatics.

Byssinosis: Amongst 24 (9%) byssinotics 15 had a history of smoking, including 5-ex-smokers on the average they had smoked 9.4 packed years. Exposure to cotton dust and fibre was 14 years amongst smokers and 12 years amongst non-smokers Five had normal lung function while another 5 had minimal changes, 14 showed moderate to severe changes, difference in pre and post shift measurement were not statistically significant.

Pakistan being a major grower and user of cotton, with a high prevalence of byssinotics disease and there is a need to carry out a large scale study, both in Punjab and Sindh to assess the situation, and appropriate steps to be adopted for its control.

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 and 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.0.460 million were released during the year, 1992-93 to following scientific societies:

- Pakistan Academy of Sciences:	Rs.1,00,000/-
- Pakistan Association of Scientists and Scientific Professionals:	Rs. 30,000/-
- Scientific Society of Pakistan:	Rs. 50,000/-
- Pakistan Association for the Advancement of Sciences	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/-
- Institute of Engineers, Pakistan:	Rs. 20,000/-
- Pakistan Society of Nematologists:	Rs. 10,000/-
- Pakistan Physical Society:	Rs. 20,000/-
- Pakistan Thalasemia Welfare Society:	Rs. 20,000/-

Grants totalling to Rs.0.140 million were also sanctioned to various institutions for publication of Scientific Journals as detailed below:

- Journal of Pharmacy:	Rs. 10,000/-
- Journal of Science, Technology and Development	Rs. 20,000/-
- Mehran University Research Journal of Engineering & Technology	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. 20,000/-
- Journal of Pharmacology:	Rs. 20,000/-
- Pakistan Journal of Marine Sciences:	Rs. 20,000/-

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. Grants totalling to Rs.0.207 million were sanctioned to the following seven (7) scientists during the report period as detailed below:

Name & Address of Grantee:	Title & Place of Conference Attended:	Amount of grant:
Dr. Viqar Hussain Senior Scientific Officer, PCSIR Laboratories Complex, Peshawar.	29th International Congress held at Kyoto, Japan: 24th August - 3rd September, 1992.	Rs. 30,750/-

Dr. Siddiq-a-Akbar, Associate Professor, Department of Agriculture, University of Engineering & Technology, Lahore.	7th International Conference on Earthquake held at Bankok: 22nd - 26th September. 1992.	Rs. 29,225/-
Dr. A. R. Shakoori, Professor, Department of Zoology, Punjab University, Lahore.	Annual Meeting of the Bangladesh Zoological Society, held at Dhaka: 14th January, 1993.	Rs. 12,770/-
Dr. Dhani Buksh, Registrar, Children Hospital, PIMS, Islamabad.	Annual Meeting of the Southern Society of Paediatric Research, USA, held from 20-22 January, 1993.	Rs. 46,885/-
Maj. General Dr. M. Saleem Deputy Commandant, Armed Forces Institute of Pathology, Rawalpindi.	5th International Conference on Thalassaemia and Haemoglobin- opathies held at Nicosia, Cyprus: 27th March-3rd April, 1993.	Rs. 19,184/-
Dr. Khushnood Siddiqui, Director, Atomic Energy Agriculture Research Centre, Tandojam.	10th Australian Plant Breeding Conference: held at Gold Coast, Australia, 10-12th March, 1993.	Rs. 40,530/-
Dr. M. Zaheer Abbasi, Associate Professor, Children Hospital, PIMS, Islamabad.	Seminar on Current practices, Neonatal and Paediatric Surgery, held at Manchester, U.K.. 6-17th June, 1993.	Rs. 27,630/-

5. AWARD/FELLOWSHIP:

Foundation has awarded partial financial assistance/fellowships amounting to Rs.0.140 million to the Ph.D scholars during the report period as per detail below:-

Name & Address of Scholars:	Purpose of Grant:	Amount Released:
Mrs. Rakhshanda Nawaz, Deptt. Of Chemistry, Agricultural University, Faisalabad.	Partial Financial assistance for Ph.D Studies.	Rs. 50,000/-
Mr. Muhammad Javed, Deptt. Of Soil Sciences, Agricultural University, Faisalabad.	Ph.D Fellowship	Rs. 36,000/-

Mr. Muhammad Hanif Noomrio, Deptt. Of Biochemistry, University of Sindh, Jamshoro.	Ph.D Fellowship.	Rs. 15.000/-
Mr. Muhammad Yakoub. Deptt. of Chemistry, University of Sindh, Jamshoro.	Ph.D Fellowship.	Rs. 15,000/-
Mr. Farhatullah Khan, Deptt. Of Agriculture, Gomal University, D.I. Khan.	M.Sc. (Hons) Fellowship.	Rs. 24,000/-

6. INTERNATIONAL LIAISON

- The Chairman, Pakistan Science Foundation visited China on the invitation of Natural National Science Foundation to attend the International Symposium on Improvement of Science Funding System held at Beijing, from 26th to 30th October, 1992.
- The Chairman, PSF visited Italy for participation in the VII Inter Governmental Steering Committee (IGSC) of the Technical Information Pilot System (TIPS) from 23rd to 25th November, 1992.
- Dr. P.S. Meadows, Professor, Zoology Department, Glassgow University, U.K., visited Pakistan under M.O.U. between PSF and Royal Society London. Prof. Meadows is external Adviser and Consultant of the proposed "Indus River Project". During his stay in Pakistan he surveyed the course of Indus River upto Northern Areas for collection of data regarding the Indus River Project. Held discussions with Scientists in PSF, PMNH, WWF, IUCN, Quaid-i-Azam University, Karachi University, Institute of Oceanography, Karachi, Zoological Survey of Pakistan for active collaboration of these institutions in the proposed project.
- Dr. M. L. Deadman, Department of Agriculture, Reading University, U.K. visited Pakistan from 23rd June, to 6th July, 1993 under M.O.U. with the Royal Society London. During this he visited National Agri. Research Centre, Islamabad, Agri. Research Institute, Tarnab, Peshawar and Potato field in Swat. As per provisions of the M.O.U. Pakistan Science Foundation provided local hospitality to Dr. M. L. Deadman, whereas, transport for inland travel was provided by NARC.
- Pakistan Science Foundation provided an amount of Rs.26,630/- to Dr. M. Afzal Dean, Faculty of Natural Sciences, Quaid-i-Azam University, Islamabad for his visit to U.K. under M.O.U. with the Royal Society.

7. OTHER ACTIVITIES

- A meeting of the heads and representatives of various organizations under the Ministry of Science and Technology was held on 13th December, 1992 in the Pakistan Science Foundation. The Chairman, PSF briefed the participants about the

charter, organizational setup, statutory functions, activities, achievements and budgetary position of PSF, PMNH, and PASTIC. This meeting was in series with these being held for Interaction of various Science & Technology organizations under the Ministry of Science & Technology.

- Various reports/informations required by the Ministry of Science and Technology were prepared and sent to the Ministry.

PLANNING & DEVELOPMENT WORK:

a) Construction of Pakistan Science Foundation Building:

The PC-1 for the Construction of Pakistan Science Foundation building was approved by C.D.W.P. in April, 1988 and its administrative approval conveyed to the Foundation in May, 1989. Whereas, allocation of funds for the implementation of this project (i.e. Rs. 4.5 million) was made in the PSDP 1992-93. The foundation stone of the PSF Building was laid down on 27th August 1992 by Engr. Elahi Bukhsh Soomro, the then Minister for Science & Technology. Subsequent to the receipt of funds, the Foundation invited tenders for the constructions of PSF Building from prequalified Contractors. The lowest tender amounting to Rs. 14.277 million was accepted by the Competent Authority and the tender was awarded to the lowest bidder. The construction was initiated w.e.f. 20th Feb. 1993 with the ground breaking by Dr. B.A. Sheikh, Chairman Pakistan Science Foundation and will be completed within the stipulated period of two years. During the report period 30% of civil work had been completed.

- b) Monitoring of the Development Programmes of the Foundation, PASTIC and PMNH was carried out on quarterly basis and reports thereon provided to the Ministry of Science & Technology (P&D Section).
- c) Public Sector Development Programme for 1993-94 in respect of PSF, PMNH and PASTIC was prepared and sent to the Ministry.
- d) Various statements statistical informations pertaining to PSF funding required by the Ministry or other S&T organizations were provided to the agencies concerned.

B SCIENCE POPULARIZATION SECTION:

The activities of the Foundation for promotion and popularization of Science through various programmes continued during the year 1992-93. A summary of these programmes is given below:

1. FUNDING FOR CONFERENCES/SYMPOSIA/SEMINARS ETC:

The Foundation provided financial assistance for National and International Science Conferences/Seminars/Symposia/Workshops etc. held in Pakistan. During the

report period an amount of Rs.4.93.000/- was sanctioned to the following, Scientific Organizations /Institutions for organizing such events.

Events	Organizing Agency	Amount
8th National Conference on Engineering Fracture Mechanics.	Mehran University of Engineering & Technology, Jamshoro.	Rs. 10.000/-
Seminar on Kalabagh Dam: Technical Options & their Impact.	Pakistan Association of Scientist & Scientific Profession, Science Centre, D.T. 4 Minhas Road, Gulshan-e-Iqbal, Karachi.	Rs. 20.000/-
International Seminar on Telecommunication.	The Institution of Engg. Pakistan Lahore Centre.	Rs. 20.000/-
FADAS Symposium on New Materials and Contemporary Applications.	Pakistan Academy of Science, Islamabad.	
BESPIN Preparation Schools in Pakistan.	Department of Mathematics, Quaid-i-Azam University, Islamabad.	Rs. 15,000/-
International Symposium/ Workshop on Silicon Technology, Islamabad.	National Institution of Silicon Technology, Islamabad.	Rs. 50.000/-
International Symposium/ Workshop on "Frontiers of Molecular Biological Research.	National Centre of Excellence in Biology, University of the Punjab, Lahore.	Rs. 20,000/-
3rd International Symposium on "Protein Structure, Function, Relationship.	H.E.J. Research Institute of Chemistry, University of Karachi.	Rs. 40,000/-
Science Exhibition.	Govt. Comprehensive Higher Secondary School, Bannu.	Rs. 5.000/--
Fourth National Conference of Plant Scientists.	Pakistan Botanical Society National Institute of Bio-Technology and Genetic Engg. (NIBGE) Faisalabad.	Rs. 20.000/-
First International Conference on the Impact of Food Research on New Product Chemistry.	Food Technology Section of Applied Chemistry Department University of Karachi.	Rs. 15.000/-

Professor A.L. Sheikh. All Pakistan Intersivity Soft Ware Competition and Exhibition	The Institute of Mathematics Computer Science. University of Sindh, Jamshoro.	Rs. 20,000/-
Second National Symposium of Bio-Chemistry.	Institute of Chemistry, University of Sindh, Jamshoro.	Rs. 20,000/-
13th Annual Congress of Zoology.	Zoological Society of Pakistan. Deptt. Of Zoology, University of the Punjab, Lahore.	Rs. 20,000/-
Symposium on Trends in Physics.	Department of Physics. University of Karachi, Karachi.	Rs. 20,000/-
2nd International Meeting on Plant Nematology.	National Nematological Research Centre, University of Karachi.	Rs. 15,000/-
Workshop on Teaching and Research in Bio-Chemical Sciences.	The Institute of Chemistry University of the Punjab, Lahore.	Rs. 20,000/-
Second National Symposium on Analytical & Environmental Chemistry.	Department of Chemistry University of Peshawar.	Rs. 20,000/-
3rd International Symposium on Advanced Material.	Dr. A.Q. Khan, Laboratories, P.O. Box 905, Kahuta, Rawalpindi.	Rs. 30,000/-
Bara Gali Summer Camp on Electronics.	Department of Electronics. University of Peshawar.	Rs. 20,000/-

2. ORGANIZATION OF SCIENCE EXHIBITIONS/FAIRS

a. National Science & Technology Fair-1992:

Pakistan Science Foundation in collaboration with the Ministry of Science & Technology organized a Science & Technology Fair-1992 in the premises of Pakistan Sports Complex, Islamabad from 17th September to 30th September, 1992. The exhibition/Fair was inaugurated by Mr. Illahi Bakhsh Soomro, Federal Minister for Science & Technology.

The Fair was primarily arranged with the aim, "Science and Technology for Self-Reliance". The exhibition was very important not only for acquisition of Public Support for Science & Technology activities, achievements and advancement but it also helped to establish interaction between various R & D organizations/Institutions.

The Fair contained some special events like Symposium, Aero-Modelling Competition, Exhibition of Models/Innovations made by school students, Jog for Technology, Cycle Race for Science and Painting Exhibition.

Participants from NGO's, Industries, Corporations, & Individuals, Innovators took part in the exhibition and displayed their exhibits.

b. Aeromodelling Competition:-

First Aeromodelling Competition at Federal Capital was arranged on 18th September, 1992 at Sports Complex, Islamabad at the eve of the National Science & Technology Fair. The competitions demonstrated radio-controlled flying and exhibited scale models. The competition was witnessed by a large number of public. The Secretary, Ministry of Science & Technology gave away the prizes.

c. Symposium on S&T for Self Reliance:-

The Pakistan Science Foundation organized a one day symposium on S&T for Self Reliance on 26th September, 1992 at Islamabad. The Symposium was inaugurated by Syed Fakhar Imam, Federal Minister for Education. The Symposium was attended by about 80-participants from Local S&T Organizations. Eight expert delivered talks on Science Education, Science Promotion and Technological Development for Self Reliance.

3. POPULAR SCIENCE LECTURES:

A total number of two lectures were organized at PSF auditorium and Marriott Hotel, Islamabad in which eminent scientists/scholars addressed to the audience from various technical organizations. The name of speakers and topics are as below:-

28-02-1993	Dr. Muhammad Jaffar, Associate Professor, Department of Chemistry, Quaid-i-Azam University, Islamabad.	Vehicular Pollution: an Overview.
07-02-1993	Dr. Barnard Sounier	Control of Eutrophication in Reservoirs.

4. SCIENCE FILM/PLANETARIUM SHOWS

a. Science Film Shows:

Foundation continued screening Film Shows in schools of Islamabad/Rawalpindi. These shows provide scientific information regarding stars, planets, galaxies. A total number of 95 shows including 56 shows at Rawalpindi schools were arranged during the period under report.

b. Planetarium Shows:

Total number of 117 shows were arranged during the period under report including 47 shows at Rawalpindi. Besides these daily 20 Planetarium Film Shows were arranged for the students and General Public during the "National Science & Technology Fair, 1992 and 1993 at Pakistan Sports Complex, Islamabad.

5. DISTRIBUTION OF SCIENTIFIC BOOKS AND MAGAZINES:

For the last year Popular Science Magazines such as Science Digest, Science Bachoon Key Liye & Jadid Science have been distributed to 200 schools of FATA, FANA and AJK.

In order to ascertain the receipt of these magazine a proforma was circulated among the schools. The response was positive. This programme of the Foundation has been very much appreciated by the schools & the student community.

6. SCIENCE POSTER PROJECTS:

The 6th Set of Science Posters comprising of the following topics were prepared, printed and distributed to all the High Schools, falling within the jurisdiction of the Boards of Intermediate & Secondary Education in the country as well as to R & D institutions.

1. Portrait of Muslim Scientist: Ibn al-Baitar.
2. Portrait of Muslim Scientist: Muhammad Bin Musa al-Khawarizmi.
3. ریاضی بجزیرہ
4. ماحولی نظام
5. گھوڑے کا ارتقاء
6. زمین
7. پرندے کی اڑان
8. ریڈیو ٹیلی سکوپ
9. پھول
10. سمندری حیات

7. SCIENCE POSTER CONTEST:

Students from nine boards of Intermediate & Secondary Education participated in the 5th Inter Board Science Posters Contest. The theme of the contest was "Future of Mankind in Space". The entries submitted by the Boards were judged by a panel of experts and the following three prizes of Rs.2,000/-, Rs.1,200/- and Rs.800/- were awarded respectively.

1. Miss. Ambar Azam,
Class 9th, Defence Authority
Model High School,
Phase IV, Karachi.
2. Miss. Aisha Iqbal,
Divisional Public School,
Model Town, Lahore.
3. Miss. Kalsoom Agha,
Class IX, Public School,
Sukkur.

8. 5TH INTRA BOARD SCIENCE ESSAY COMPETITION:

The 5th Intra Board Science Essay Competition on the theme "Science and the Environment" was announced by the Foundation. The announcement was conveyed to eleven Boards of Intermediate & Secondary Education in the country. The language of the competition was English, Urdu & Sindhi.

9. AWARDS:

The Foundation constituted an award of Rs.10,000/- for Pakistan Association for Computer Education in Schools (PACES) which will be given to the best school team working on Computers.

10. SCIENCE CLUBS PROGRAMME:

During report period endeavors were continued to encourage schools to become member of "Foundation's High Schools Science Clubs Programme.

Twenty five cheques amounting to Rs.500/- (Rs. Five hundred only) each were sent to different schools of Pakistan as being Member of the High School Science Clubs Programme, for the purchase of equipment/material for Science projects to be carried out by the School Science Club.

The Foundation has also decided to provide some more publications of Urdu Science Board to all the Science Clubs. Foundation has purchased 1000 sets of five (5) books and have been dispatched to the member schools of Foundation's High School Science Clubs Programme.

The Foundation has purchased 378 colorimeters from ESP the and manual through Dr. Jaffar, Associate Professor, Quaid-i-Azam University Colorimeters alongwith Chemicals are ready for dispatch to member schools of Foundation High Schools Science Clubs Programme.

Solar cookers alongwith cooking pot, instruction booklet, science literature including Urdu Science Board Publication (two set) have been dispatched to (Phase-II) members of High School Science Clubs Programme, through the following centre.

1. PASTIC Sub Centre, Lahore.
2. PASTIC Sub Centre, Karachi.
3. Science Caravan Office, Peshawar.
4. PCAT Regional Office, Quetta.
5. Science Caravan Office, Sukkur.

A booklet entitled "Projects for High School Science Club" has been prepared giving detailed instruction for performing some fifty two minor experiments under eight main heading alongwith six income generating projects.

11. PROMOTION OF SCIENCE IN RURAL AREAS (SCIENCE CARAVANS):

All the three units of Science Caravans viz, The Federal Unit, the NWFP Unit and the Sindh Unit continued activities in their respective areas i.e. the Federal territory of Islamabad and Rawalpindi District, NWFP and Sindh.

a Science Caravan Unit for Federal Area:

The activities of Science Caravan Federal Unit for the period under report are as under.

The Science Caravan (Federal Unit) arranged the following exhibition:

- i. A Science Exhibition from 8th - 25th August, 1992 in schools of Galhera Gali and Karore. Twenty five schools at Galhera Gali and seven schools at Karore visited the exhibition and witnessed the Planetarium/Film Show.
- ii. An exhibition at Shaheen Intermediate College Kamra, District Attock from 27th November to 3rd December, 1992,. 2500 students witnessed the exhibition.

iii. An exhibition at Sir Syed High School, P.O.F., Havelian Cantt: from 19th - 23rd December, 1992. The students of following schools visited the exhibition.

1. Sir Syed High School, P.O.F., Havelian Cantt:
2. F.G. Boys High School, P.O.F., Havelian.
3. F.G. Girls High School. P.O.F., Havelian.

b Science Caravan Unit for Sindh:

The activities of Caravan Unit, Sindh are as under.

- i. Unit participated in the space exhibition from 21st - 23rd August, 1992 organized by the Pakistan International Space Year Association at Karachi.
- ii. Unit arranged exhibition at Garhi Yasin, district Shikarpur for students of Ghari Yasin and surrounding areas from 8th to 27th September and 21st to 26th September, 1992 for boys students from 18 boys High School and Middle Schools witnessed the exhibition. Then, Caravan moved to the Government Higher Secondary (Girls) School, Garhi Yasin on 20th September for exhibition for girl students of five High/Middle Schools.
- iii. The exhibition was arranged at the following places of District Shikarpur.

<u>Place</u>	<u>Date</u>	<u>No. Of Schools</u>
Hamayoon	6th - 13th October, 1992	11
Lakhi	25th October to 18th Nov. 1992.	18
	11th to 18th November, 1992.	11
Shikarpur	29th November to 20th Decem- ber, 1992.	14
	22nd to 29th December, 1992.	10

c Science Caravan Unit for NWFP:

The staff of the Science Caravan NWFP participated in the National Science & Technology Fair-1992. The Science Caravan Exhibition remained open from 10.00 a.m. to 10.00 p.m. The exhibition particularly the planetarium shows attracted the visitors.

PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

The main objective of PMNH i.e. to collect, preserve and identify Natural History specimens and of reference collection of plants, animals, rocks, minerals and fossils of the country, continued to be worked upon. Field trips were carried out to diverse areas of Pakistan resulting in the addition of some very valuable specimens to the already collected type material. The PMNH vigorous efforts in research can be appreciated by published work which included 22 research papers and a monograph on "Cryptogamic Flora of Pakistan" during the year 1992-93. The latter was published in collaboration with Japanese counterparts from National History Museum, Tokyo. It was the result of the collaborative project entitled "Cryptogamic Expedition" 1990-92.

The distinction of PMNH lies not only in research but also in implementing a very powerful mass education and public awareness programme through 3 dimensional displays and other visual media, at its Display Corner and Display Centre. More than 150,000 person visited these two display areas this year.

Our designers/artists remained actively engaged in establishing Natural History Section at National Museum of Science and Technology, Lahore. They completed displays/dioramas pertaining to Marine Eco-system, Ocean, Man and Environment, Salt Range etc. during this report period.

Following is an outline of research, display and other activities performed by PMNH personnel during the period 1992-93.

1. BOTANICAL SCIENCES DIVISION:

a) Reference Collection:

As many as 18 field trips were carried out to Rawalpindi - Islamabad and adjoining areas, Ganda Palik area, Dina, Hazara, Peshawar, Murree, Chitral, Siran Valley, Bogarmang, Swat, Mansehra, Lahore, Baluchistan, Diamer face of Nanga Parbat etc. Collected 5060 specimens of higher plants 524 mycological specimens, 200 algal specimen bottles and 20 ferns.

b) Laboratory work:

Preservation, mounting and labelling of 1100 higher and 300 lower plants was done.

Identification of 900 higher and 200 lower plants were made.
Cataloguing of 500 higher and lower plant groups was completed.

c) Research work:

i) Projects completed/in progress:

Final report on project entitled "Mushrooms and Toadstools of Kaghan Valley" was prepared and submitted to PSF.

Report on Project "Ecological studies on the vegetation of Swat" is being prepared.

ii) Projects proposed/submitted:

Submitted one year project entitled "Algal Flora on the Trees of Islamabad"

Floristic and Ecological studies of Gadoon area. Preliminary approach to the ecotaxonomic studies of nitrogen fixing terrestrial blue-green algae of Potwar.

Two mini projects on "Plants as Aquatic Filters" and "Wild Edible Plants of Pakistan" were prepared for UNESCO's funding.

d) Extension work and Services Rendered to other Organizations:

Provided information regarding distribution and local names of 50 medicinal plants to NIH.

Identified 575 specimens of plants for the students of various colleges.

Provided artwork of the title of book on "Cryptogamic Flora of Pakistan". Also preface of the same book was prepared and despatched to the Japanese counterparts.

e) Publications:

Shinwari, Z., M. Shah and Awan, M.R. (1992). Central Asiatic Influence on the Flora of Pakistan. Central Asia Jour. of Area Study No.31 pp.

Ahmad, S. (1992). Preliminary studies on the weeds of wheat fields of Babri Banda, Kohat district, NWFP, Pakistan. J. Weed Sci. Res.5(1-2): 36-40.

Shah, M. (1993). A preliminary checklist of Potentilla sp. occurring in Pakistan and Kashmir Nat. His. Bull. Vol.1 No.1: 5-7.

Awan, M.R., S. Ahmad, M.K. Laghari and T. Nakaike (1992). Preliminary studies on useful plants of Cholistan Desert, Pakistan. Bull. Nat. Sc. Mus. Tokyo B 18(3): 109-112.

Ahmad, S., M.R. Awan and T. Nakaike (1992). The genus Rumex (polygonaceae) in Gilgit Agency, Northern Pakistan. Bull. Nat. Sci. Mus. Tokyo B 18(3): 113-116.

Shah, M. and M. K. Laghari. (1992). A note on centres of university of genus Potentilla (Rosaceae). Bull. Nat. Sci. Mus. Tokyo 18(3): 117-122.

Laghari, M.K., K. Nazir and T. Bando, (1992). Taxonomic studies of order Naviculales Malka Parbat, Part I Biologia V 37 (1):

Nakaike T. and S. Malik (ed). (1992). A list of ptendophytes collected from Pakistan in 1992. Cryptogamic Flora of Pakistan. Vol.1:261-316. Tokyo.

Laghari, M.K. and K. Sultana (1992). Blue-green algal Flora of Keenjhar Lake. Sind. Pakistan. Cryptogamic Flora of Pakistan Vol.1: 69-73. Tokyo.

Yamamoto, Y., M. Hagiwara and K. Sultana (1992). Myxomycetes from Northern Pakistan. Cryptogamic Flora of Pakistan. Vol.1: 109-117, Tokyo.

Laghari, M.K. and K. Sultana (1992). Some blue-green algae of Chilla Dam. Sind. Pakistan. Cryptogamic Flora Pakistan. Vol.1: 65-67. Tokyo.

2. EARTH SCIENCES DIVISION:

a Reference collection:

A total of 8 field trips were extended to Malakand. Mohammand agencies, Swat, Chitral, Buner, Dir, Hazara, Mirpur, Dina, Rohtas, Pabb hills, Lahore etc. As a result 454 rock/mineral samples and 20 bags of small mammal fossils were collected.

b Laboratory work:

Catalogued 200 samples of rocks/minerals. Petrographic studies of 75 rock samples were made. Prepared thin sections of 300 samples. Washed 50 bags of sediments for the recovery of fossils.

Analysed 150 samples of different rock/minerals.

c Research work:

i) Projects completed/in progress:

Petrographic studies of Khewra sandstone, Kussak Formation and Baghanwala Formation exposed in Salt Range.

ii) Projects proposed/submitted:

Mineralization studies of Pb-Zn-Mb-Fe deposits of Besham-Kohistan area.

d Extension work and Services Rendered to other Organizations:

Identification of 110 rock/mineral samples for students of different colleges.

Worked in collaboration with the A.Q. Khan Laboratories for the crystallographic problems of Salt.

Provided technical guidance to F.G. College for women students for preparation of 3-D model of Solar System and planet earth, on computer.

e Publications:

Baqri, S.R.H., S.A. Hasan, M.R. Awan and S. Khatoon (1992). The preliminary investigation about the changing environment of Cholistan Desert, Nat. Hist. Bull. 1 No.1 pp.1-4.

Baqri, S.R.H. (1991). Analysis of dolomite and calcite by X-ray diffraction techniques. Proceedings of IInd International Symposium on Advanced Materials. Pub. by A.Q. Khan Laboratories. Vol. pp.478-483.

Baqri, S.R.H. (1991). Investigation of clayminerals in roof shales by X-ray diffraction. Proceedings of IInd International Symposium. : 471-477.

Baqri, S.R.H. and M.Q. Baluch (1991). Sedimentological studies of palaeo environments of Khewra sandstone with reference to its hydrocarbon potential, Pak. Journ. of Pet. Tech. Islamabad. : 23-38.

Rajpar, A.R. (1993). Taphonomy of a Pliocene Quarry in the Upper Siwalik, near Mirpur, Azad Jammu Kashmir Pak. J. Zool., Vol.25(3): pp.243-247.

3 ZOOLOGICAL SCIENCES DIVISION:

a Reference collection:

9 trips to different parts of Hazara Division, Dina, Murree, Lahore, Multan, Rawalpindi - Islamabad, Larkana and Northern areas of Pakistan were made. Collected 1362 fish specimens, 943 insects, 436 small mammals, 40 lizards, 12 frogs, 15 birds, 1 snake and 45 centipede/millipede specimens.

b Laboratory work:

Catalogued 2625 insect specimens. Identified 150 faunal specimens. Skinning of 80 animals was completed. Taxidermy of 34 faunal specimens was accomplished. Models of 50 faunal specimens were prepared and 20 soil samples were analysed.

c Research work:

i) Projects completed/in progress:

Faunal Exploration of Hazara Division.

Zoogeographical studies of Malakand division with reference to biodiversity and conservation.

ii) Projects proposed/submitted:

Zoogeographical and ecological studies of Malakand division with special reference to conservation of nature and natural resources.

Impact of water pollution on aquatic life. Faunal exploration of Hazara Division for the year 1992-93.

d Extension work and Services Rendered to other Organizations:

Identified 50 invertebrate specimens for students. Prepared write-ups and identified specimens for different exhibits of National Museum of Science and Technology, Lahore.

e Publications:

Hasan, S.A. and L.A. Abro (1992). A new species of the genus Antestia Stal (Heteroptera : Pentatomidae) from Indo-Malayan sub region. Nat. Hist. Bull. 1 (1):20.

Hasan, S.A. and M.A. Hafeez (1992). Effect of CU-IUD on the biochemistry of rat fallopian tube. Nat. Hist. Bull.1(1)8.

Khan, M.S. and K.J. Baig (1992). A new Tenuidactylus Gecko from North-eastern Gilgit, Northern Pakistan. Pak. J. Zool. 24(9): 273-277.

Hasan, S.A. (1992). Uptake of estrogens by the uterus of rat in the presence of IV-TVPB. Biologia 37(1):37-42.

Abro, L.A. (1992). A new species of Tabanus (Diptera: Tabanidae) from Pakistan. Pak. J. Sci. Ind. Res. 35 (6): 244-245.

4. PUBLIC SERVICES DIVISION:

a Museum Display and Maintenance:

Following assignments were completed.

Construction of permanent display and storage structure for black board/screen. TV/VCR and public address system was completed.

For the unveiling ceremony of the "Hiroshima Stone" the displays and exhibits of Display Corner were reorganized. All the skeletons and their plinths were thoroughly cleaned.

Prepared new sign system of the main Museum display.

Also covered the Salt Range Display with glass and bilingual discription and identification key of ZSD exhibits was prepared.

Disinfested the biological specimens of the dioramas.

The frames of Children Discovery Room, Earth Sciences Display Hall, Cultivation of Pakistan diorama and staircase panels were painted.

Exposed and prepared 172 black & white prints and 200 colored photographs and 86 slides pertaining to various PMNH activities.

b Educational Activities:

Following films were shown at the Marghazar Display Corner:

- Innovations - Antartica Paradox
- Fighting for the Animals
- Innovations - Return to the Sea
- Discovery - Life in Ocean
- Recycling process
- Environment Treatment
- Sea Treasure - Copper
- Conservation - Wild America Vol.III
- Plants in Ecosystem

Helped and provided assistance to the T.V. Producer for the preparation of educational programme on PMNH.

Guided tours were provided to 3354 students and 250 teachers, providing information and exploration of various exhibits.

c Services Rendered to other Organizations:

Pakistan Science Foundation

For the Second S & T Fair designed banners, advertisements, roadside hoardings etc. Also designed seminar's title cover, certificates, awards, shields and inaugural plate etc.

Designed and prepared artwork for the plaque of PSF.

Procured and prepared marble slab with brass lettering for PSF new building.

Fabricated display structure of pipes for the presentation of architect of PSF building, National Museum of Science & Technology, Lahore (NMST).

National Museum

Prepared and completed Marine Ecosystem, Ocean, Man and his environment, Solar System, Salt Range, Desert and Temperate ecosystems.

Prepared and painted 30 acrylic models of marine animals for Marine life diorama.

Identified 60 birds and mammals displayed in various dioramas. 112 photographs of animals were also identified.

Draft of urdu version of write-ups was handed over to Director NMST for approval.

d Number of visitors:

Museum Building 12,060
Display Corner Marghazar 1,50358

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

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:-

During 1992-93 the activities undertaken by PASTIC are briefly described below:

Document Procurement and Supply:

A total of 1156 S&T documents were procured and supplied against 1409 requests received from scientists and researchers.

Bibliography Service:

Against 4 orders 104 references were collected and supplied on S&T topics to the researchers.

Current Content Service:

325 Scientists were provided the content pages from S&T journals on Chemistry, Biology, Physics, Computation, Earth Sciences, Mathematics and Medicine.

Abstracting and Indexing Services:

PASTIC publishes a quarterly journal viz. Pakistan Science Abstracts which reports of abstracts published in recent S&T Journals of Pakistan. During 1992 Vol. 30(1-2) were published.

PASTIC National Science Reference Library:

About 729 issues of various S&T periodicals, 40 documents and 95 books were received in the libraries of PASTIC National Center and Karachi Center. The number of references supplied was 682. Under a Development project "Strengthening of PASTIC Library" 13 books were purchased and 25 S&T journals were renewed.

Compilation of Union Catalogue:

The data of periodical holdings of 103 libraries have been updated in order to produce Union Catalogue.

Technology Information:

Vol. 5 (1-4) of the bulletin "Technology Information" were produced based on information on technologies collected from 27 countries. The mailing list for the bulletin comprises of 251 industrial and technical enterprises/entrepreneurs in public and private sectors.

Reprographic Services:

About 1,405,150 impression, 2,691 pages and 89,850 copies were produced by the Reprography Unit for PSF, MOST, PMNH, PCSIR, PCRWR, PCAT, PMRC, TIPS, PAS, NCRD, MOFA, QAU and NARC etc.

Computerization Activities:

- a) 5 IBM compatible system. HP Paint Jet XL and HP Scan Jet IIC Scanner were purchased. For the year 1993-94 it is decided to purchase 7 IBM compatible system. Novel Operating System, 5.25" rewriteable Optical Disk Drive, Modems, and CD-ROM Drive
- b) The following databases have been strengthened.
 - Database on Research Published in Pakistan.
 - Database of Serial Holdings in S&T Libraries of Pakistan.
 - Database on Pakistan Environmental Health Documents.
- c) Composed Pakistan Science Abstracts, Annual reports for PSF (1987- 90), PCAT, NARC, Technology Information, Hand Book for Scholars, Material for S&T Fair '92 and FASAS/COMSTEC Workshop, NCRD newsletter and slides for VC QAU and Chairman PSF.
- d) Computer Software and Desk-top publishing services/facilities were provided to other S&T organizations.
- e) Computer Training Courses: PASTIC provided computer training on CDS/ISIS Package from 5-17 December, 1992 in Karachi in collaboration with NLDP.

International Liaison:

PASTIC is the National Focal point of International/Regional Information Network like, UNISIST, SAARC, WHO/CEHANET and UNEP/INFOTERRA. PASTIC is also the Coordinating/Collaborating agency for UNDP/TIPS, UNESCO/ASTINFO and AIT/ENSICNET.

The following collaborating activities were undertaken:

INFOTERRA:

- i. Referral services were provided to IUCN, Haigler Bailey Inc, on energy and air pollution.

- ii. Letters were sent to 60 organisations for participating in the infoterra international sources directory. The response was received from 45 organisations which was communicated to the headquarters in Nairobi.
- iii. Information was supplied in response to queries pertaining to: pollution from plastic bags; hygiene in hatcheries; pollution from leather industry; chemical safety; waste treatment in starch industry; mercury pollution; rehabilitation of ecosystems; hazardous wastes; global warming; meteorology and geophysics.

CEHANET

- i. CEHA Technical Focal Points in Pakistan were identified and questionnaires were sent to 50 organizations. Feed back was received from 15 organizations and communicated to CEHA in Amman.
- ii. Information was supplied on: Air pollution; Cancerous aspects of pollution; Socio-economic and health aspects of pollution; Reclamation of Soils; Vehicular pollution.
- iii. The National Environmental Health Documents Database was strengthened.

ASINTFO

- i. CDS/ISIS was provided to NIH, PIDE and National Library.
- ii. ASTINFO newsletter/promotion material were distributed.

UNESCO

- i. A brief was prepared for UNESCO on information scenario in Pakistan.
- ii. UNESCO has designated PASTIC as the Official Distributor of Micro IDAMS software package for statistical analysis.

MISCELLANEOUS

- i. Questionnaires from various national/international agencies were filled out.
- ii. List of World Universities offering courses in Environmental Biology, Microbiology and Environmental Health were prepared.
- iii. A list of S&T/R&D organizations was prepared for S&T Fair.
- iv. A write-up on M/S&T and its organizations was prepared for the Illustrated Handbook of Pakistan.

Future Tasks

- i. Training courses on CDS/ISIS in AJK, Karachi and Sind University.
- ii. Submission of following project proposals to UNESCO on ASTINFO recommendation.
 - CDS/ISIS users meeting.
 - Training of one PASTIC Officer in information technology and computerized library services.

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 (PSF)

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

CHAPTER 3

AKBAR & COMPANY CHARTERED ACCOUNTANTS

AUDITOR'S REPORT

We have audited the annexed Balance Sheet of "PAKISTAN SCIENCE FOUNDATION" as at June 30, 1993 and the related Receipts and Expenditure Account for the year ended June 30, 1993 and we 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, 1993 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 balances except for expenses incurred but not paid upto June 30, 1993. We are also satisfied of disbursement made from the grants.

**AKBAR & CO
CHARTERED ACCOUNTANTS**

PAKISTAN SCIENCE FOUNDATION, ISLAMABAD
BALANCE SHEET AS ON JUNE 30, 1993

CAPITAL & LIABILITIES	NOTES	1993 RUPEES	1992 RUPEES	PROPERTY AND ASSETS	NOTES	1993	1992
General Fund	2	7,875,397	6,152,562	Fixed Assets (As per Schedule annexure)			
Research Support Grant	3	27,572,997	23,994,400	At cost		9,651,387	8,158,879
				Less Accumulated Depreciation		3,666,952	3,283,827
						5,984,435	4,875,052
				RESEARCH PROJECTS IN PROGRESS	5	27,572,997	23,994,400
Current liabilities	4	419,054	81,453				
				CURRENT ASSETS			
				Account Receivable	6	176,970	110,140
				advances Deposits and Prepayments	7	1,213,607	753,487
				Cash and Bank Balance	8	919,439	495,336
						2,310,016	1,358,963
TOTAL		35,867,448	30,228,415	TOTAL		35,867,448	30,228,415

NOTE The annexed notes form an integral part of these accounts .

PLACE LAHORE CHAIRMAN TRUSTEE TRUSTEE

DATE 16 OCTOBER, 1993
AKBAR & COMPANY
CHARTERED ACCOUNTANTS

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

PARTICULARS	C O S T				D E P R E C I A T I O N			WRITTEN DOWN VALUE AS ON JUNE 30, 1993
	AS ON JULY 1, 1992	ADDITIONS /DELETION	AS ON JUNE 30, 1993	RATE %	AS ON JULY 1, 1992	FOR THE YEAR	AS ON JUNE 30, 1993	
Lease hold land	3,013,919	699,499	3,713,418	--	--	--	--	3,713,418
Furniture and Fixtures	740,171	85,229	825,400	6	318,105	30,438	348,543	476,857
Office equipments	1,068,401	8,126	1,076,527	15	724,373	52,823	777,196	299,331
Air Conditioner	194,974	--	194,974	15	152,874	6,315	159,189	35,785
Motor Vehicles	1,876,490	657,300	2,533,790	20	1,391,623	228,433	1,620,056	913,734
Science Equipments	969,833	--	969,833	15	623,931	51,885	675,816	294,017
Library Books and Films	294,411	42,354	336,765	5	72,278	13,224	85,502	251,263
Bicycle	680	--	680	20	643	7	650	30
1993	8,158,879	1,492,508	9,651,387		3,283,827	383,125	3,666,952	5,984,435
1992	8,083,814	75,065	8,158,879		2,994,789	289,038	3,283,827	4,875,052

PAKISTAN SCIENCE FOUNDATION

**RECEIPTS AND EXPENDITURE ACCOUNT FOR
THE YEAR ENDED JUNE 30, 1993**

RECEIPTS

<u>Development Grants</u>		5,450,000	850,000
<u>Non-Development Grants</u>		23,739,000	15,341,000
		29,189,000	16,191,000

EXPENDITURE:

Development Grants	9	5,450,000	850,000
--------------------	---	-----------	---------

NON-DEVELOPMENT GRANTS:

- Grant	10	9,326,017	5,614,336
- Travel Grants for Science Survey.	11	328,795	71,912
- Other Function	12	2,297,405	1,018,022
- Administrative Expenses.	13	10,063,948	8,680,686
- Prior Year Adjustment			(12,620)

TOTAL EXPENDITURES:		27,466,165	16,222,336
----------------------------	--	-------------------	-------------------

Balance transferred to General Fund Account		1,722,835	(31,336)
--	--	------------------	-----------------

PAKISTAN SCIENCE FOUNDATION, ISLAMABAD

NOTES TO THE ACCOUNTS AS ON JUNE 30, 1993

STATUS AND OBJECT:

PAKISTAN SCIENCE FOUNDATION is a statutory organization established under Pakistan Science Foundation Act, 1973 on the day of 2nd February, 1973. The main object of its establishment is to promote and finance scientific activities have a bearing on the socio-economic needs of the country.

1. ACCOUNTING POLICIES:

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

(i) GRANTS RECEIVED:

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

(ii) RESEARCH SUPPORT GRANT

Research support grant has been accounted for on payment basis.

(iii) FIXED ASSETS:

Fixed assets have been valued at cost less accumulated depreciation except lease hold land which is valued at cost. Depreciation on fixed assets have been charged on reducing balance method.

2. GENERAL FUND

Movement during the year is as under:

	1993	1992
	RUPEES	RUPEES
Balance as on July 01	6,152,562	6,183,898
Add: Balance transfer from receipt and expenditure account.	1,722,835	(31,336)
Balance as on June 30.	7,875,397	6,152,562

3. RESEARCH AND SUPPORT GRANT

The made up is as under:-

Balance as on July 1		23,994,400	22,045,241
Add: Disbursement during the year	3.1	7,324,144	4,602,276
		31,318,544	26,647,517
Less: Project completed during the year	3.2	3,745,547	2,653,117
		27,572,997	23,994,400

3.1 In accordance with the principles out-lined charter grants aggregating Rs.7,324,144 have been paid by the Foundation during the year for consulting of various approved scientific research projects as detailed below:-

Medical Sciences	1,600	113,400
Chemical Sciences	2,250,194	830,645
Agricultural Sciences	1,745,838	1,085,100
Biological Sciences	1,106,439	954,268
Earth sciences	33,934	256,109
Engineering Sciences	767,106	59,944
Physical Sciences	868,499	818,334
Institutional Support	491,000	314,900
Board Committee Meeting	58,334	91,148
Math & Computer Sciences	1,200	78,428
	7,324,144	4,602,276

3.2 PROJECTS COMPLETED DURING THE YEAR

Biological Sciences	798,863	488,980
Chemical Sciences	883,759	--
Earth Sciences	478,074	440,247
Physical Sciences	619,443	752,609
Agricultural Sciences	379,146	558,118

Mathematical Sciences	--	375.163
Medical Sciences	113.000	38.000
Engineering Sciences	473.262	--
	3,745,547	2,653,117

4. CURRENT LIABILITIES

The made up is as under:

Audit fee payable		12.500	12.500
Expenditure payable	4.1	86.844	68,953
Security payable	4.2	319.710	--
		419,054	81,453

4.1 EXPENDITURE PAYABLE

The made up is as under:

Sui Gas		313	351
Telephone Bill		68.900	66.364
Water		4.404	2,238
Electricity		13.227	--
		86,844	68,953

4.2 SECURITY PAYABLE

The made up is as under:

M/S. Moderate Builder, Lahore		305.360	--
M/S. Pangraphic (Pvt) Islamabad.		14.350	--
		319,710	--

5. RESEARCH PROJECT IN PAKISTAN **27,572,997** **23,994,400**

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	176,970	70,000
POL Coupons stock	--	40,140
	176,970	110,140

7. ADVANCES, DEPOSITS AND PREPAYMENTS:

The made up is as under:

Advance to staff	95,153	14,037
Deposits	5,500	5,500
Advance Rent	1,112,954	733,950
	1,213,607	753,487

8. CASH AND BANK BALANCES:

The made up is as under:

Cash in hand	8.1	26,454	25,956
UNESCO Coupons		573,929	469,380
National Bank of Pakistan A/C No.52	8.2	319,056	--
		919,439	495,336

8.1 Cash in hand was not physically verified by us as on June 30, 1993. However, we have relied upon the certificate provided by the management of its physical existence as on June 30, 1993.

8.2 UNESCO Coupons in hand were not physically verified by us as on June 30, 1993. However, we have relied upon the certificate provided by the management of its physical existence as on June 30, 1993.

● **9. DEVELOPMENT GRANTS**

The made up is as under:

i) Construction & Equipment of Science Caravan.	950,000	850,000
ii) Construction of PSF Building	4,500,000	--
	5,450,000	850,000

10. GRANTS

Research and Support Grant	7,324,144	4,602,276
Scientific Societies & Professional Bodies.	603,000	492,060
Scientific Conferences, Meetings & Seminars	430,832	520,000
Operation of Science Caravan		968,041 --
	9,326,017	5,614,336

11. TRAVEL GRANT FOR SCIENTIFIC SURVEY

Exchange of Visit of Scientists and Technologists.	328,795	71,912
	328,795	71,912

12. OTHER FUNCTIONS

Science Centres & Herbaria		262,845	149,013
Information & Documentation	12.1	29,385	58,485
Award, Prize & Fellowship		100,000	36,000
International Liaison		44,769	102,165
Science Promotion Activities		712,406	572,367
Scientists Pool/Senior Scientists Emeritus.		48,000	--
Science Fair		1,100,000	99,992
		2,297,4051,	1,018,022

12.1 INFORMATION AND DOCUMENTATION:

The made up is as under:

Opening Receivable	70.00	105.929
Add: Purchases	240.904	150,000
Opening in hand	469.380	341.936
	780,284	597,865
Less: Current Receivable	176.970	70.000
Closing in hand	573.929	469.380
	750,899	539,380
	29,385	58,485

13. ADMINISTRATIVE EXPENSES:

Salaries and Other Benefits	31.1	6,354,175	5,235,583
Traveling Expenses		70,594	88,134
Rent	13.2	1,233,678	1,739,308
Electricity, Gas & Water		125,311	140,777
Postage, Telegrams & Telephone	13.3	961,657	573,987
Printing and Stationery		217,801	68,558
Vehicle Running and Maintenance	13.4	506,081	344,765
Newspapers, Periodicals and Magazines		31,075	25,674
Liveries & Uniforms		7,479	6,580
Entertainment for Official Meetings		33,594	13,862
Repair and Maintenance of Office			
Equipment and Furniture		56,586	60,657
Miscellaneous		15,837	11,756
Audit Fee		12,500	12,500
Advertisement & Publicity		48,954	--
Law Charges.		5,501	35,680
Depreciation		383,125	289,038
Repair of Car Shed		--	33,824
Transferred to Receipt and Expenditure Account		10,063,948	8,680,683

13.1 SALARIES AND OTHER BENEFITS.

The made up is as under:

Salaries and Benefits	6,315,726	5,182,916
Staff Welfare Fund	26,165	10,000
Adjustment for Advance Received.	12,284	42,667
	6,354,175	5,235,583

13.2 RENT

The made up is as under:

Balance as on July 1.	733,950	649,424
-----------------------	---------	---------

Paid during the year	1,612,682	1,823,834
	2,346,6322,	473,258
Less: Advance Rent	1,112,954	733,950
	1,233,678	1,739,308

13.3 POSTAGE, TELEPHONE AND TELEGRAM

Postage and Telegram	35,194	29,874
Telephone & Telex	923,927	522,184
	959,121	552,058
Add: Payable for June,1993	68,900	66,364
	1,028,021	618,422
Less: Opening payable	66,364	44,435
	961,657	573,987

13.4 VEHICLE RUNNING AND MAINTENANCE:

The made up is as under:

Opening Balance	40,140
Add: During the year	465,941
	506,081

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

AKBAR & CO
CHARTERED ACCOUNTANTS

LAHORE: 65-SHAHRAH-E-QUAID-E-AZAM
DATED: OCTOBER 16, 1993

PAKISTAN MUSEUM OF NATURAL HISTORY -ISLAMABAD

NON DEVELOPMENT ACCOUNT
BALANCE SHEET AS AT 30TH JUNE 1992

FUNDS AND LIABILITIES	1993 RS.	1992 RS.	PROPERTY AND ASSETS NOTE	AMOUNT Rs.	TOTAL Rs.
Accumulated Fund	4,588,962	4,460,885	FIXED ASSETS (At Cost) Schedule annexed) 1	4,853,618	4,451,866
Add; Excess of Income Over Expenditure for the year	485,255	128,077	CURRENT ASSETS		
			Consumable store & Stock	11,955	4,614
			Advances, Prepayments 2	210,390	134,229
			Cash in hand	4,254	4,253
				226,599	143,096
Current Liabilities					
	6,000	6,000			
Audit fee payable	5,080,217	4,594,962		5,080,217	4,594,962

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, 1993 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.

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

M.HUSSAIN CHAUDHRY & CO.
CHARTERED ACCOUNTANTS

PAKISTAN MUSEUM OF NATURAL HISTORY - ISLAMABAD
NON DEVELOPMENT ACCOUNT
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED

30TH JUNE, 1993

<u>INCOME</u>	1993	1992
	Rs.	Rs.
Grant From Government	8,500,000	6,174,000
LESS: <u>EXPENDITURES</u>		
Salaries and allowances	3,718,451	3,899,143
Medical facility	234,358	196,358
Over time	21,641	19,955
G.P.F Contribution	301,021	301,238
G.L.I. Contribution	11,514	11,904
Gratuity	826,381	194,079
Rent Office Accommodation	1,225,152	531,949
Ground Rent to B.D.A.	6,049	10,588
Traveling Expenses	107,127	13,379
Repair & Main Office Equipment	25,258	8,849
Utilities	198,587	223,544
Haj Expenses	15,000	--
Postage and Telegrams	5,282	1,766
Stationery, Printing, Consumable Stores	129,557	56,746
Sale Proceeds of Vehicles deposited with State Bank of Pakistan.	145,618	--
Loss on Sale of Vehicles	129,336	--
Entertainment Official Meeting	1,509	1,705
Telephone Expenses	226,773	116,255
P.O.L Vehicles repair	75,065	10,674
Uniform and liveries	3,450	2,160
Audit fees	6,000	6,000
Advertisement	1,844	15,208
Newspaper and Magazines	4,840	4,459
Rent Residential Accommodation	572,433	412,466
Miscellaneous expenses	20,774	7,498
	8,009,016	6,045,923
less: Prior years Adjustment	490,984	128,077
Excess of income over expenditure	(5,729)	--
	485,255	128,077

ADMINISTRATIVE OFFICER

ACCOUNT OFFICER

PAKISTAN MUSEUM OF NATURAL HISTORY - ISLAMABAD
NOTES TO THE ACCOUNT FOR THE YEAR ENDED 30TH JUNE'1993
NOTE 1) SCHEDULE OF FIXED ASSETS AS AT 30.6.93

PARTICULARS	TOTAL AS ON 1-7-92	ADDITION/ DELETION	TOTAL AS AT 30TH JUNE 93
Land	1,050,000	--	1,050,000
Furniture & Fixture	952,827	39,522	922,349
Office & Labor- atory Equipment	1,510,342	37,184	1,547,526
Books	363,302	--	363,302
Whale & Elephant	25,000	--	25,000
Chemical	114,263	--	114,263
Vehicles	436,132	600,000 (274,954)	761,178
TOTAL:	4,451,866	676,706 (274,954)	4,853,618

PAKISTAN MUSEUM OF NATURAL HISTORY ISLAMABAD

2) ADVANCES AND PREPAYMENTS	AMOUNT	
	Rs.	
Ground Rent	1.513	*
Earth Science Division Office Rent	23.935	.
Rent Residential Accommodation	184.942	
	210,390	

PAKISTAN MUSEUM OF NATURAL HISTORY - ISLAMABAD
DEVELOPMENT ACCOUNT
BALANCE SHEET AS AT 30TH JUNE 1993

CAPITAL AND LIABILITIES	1993 Rs.	1992 Rs.	PROPERTY AND ASSETS	NOTE	1993 Rs.	1992 Rs.
Accumulated Fund	42,714,914	36,714,914	FIXED ASSETS - (AT COST)			
Grant received from Govt. of Pakistan	15,000,000	6,000,000	Schedule Annexed	(1)	8,107,839	7,912,509
CURRENT LIABILITIES			Work in Progress Building under construction.			
Audit fee payable	57,714,914	42,714,914		(2)	35,968,804	34,800,960
			CURRENT ASSETS			
			Advance & Repayment	(3)	13,638,217	1,445
	57,714,914	42,714,914			57,714,914	42,714,914

ADMINISTRATIVE OFFICER

ACCOUNT OFFICER

AUDITORS' REPORT- Together with the income & expenditure account for the year ended 30.6.92

We have examined the Balance sheet of PAKISTAN MUSEUM OF NATURAL HISTORY ISLAMABAD" (DEVELOPMENT ACCOUNT) for the year ended 30th June, 1993 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 statement 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 JUNE 1993.

M. HUSSAIN CHAUDHURY & CO.
CHARTERED ACCOUNTANTS

M. HUSSAIN CHAUDHURY & CO.
CHARTERED ACCOUNTANTS

53/Haider Road,
RAWALPINDI.

PAKISTAN MUSEUM OF NATURAL HISTORY - ISLAMABAD
DEVELOPMENT ACCOUNT
FIXED ASSETS AS AT 30TH JUNE, 1993

NOTE NO. 1

PARTICULARS	BALANCE 1.7.1992	ADDITION/ (DELETION)	TOTAL 30.6.1993
Vehicles	827,200	--	827,200
Generator	8,990	--	8,990
Laboratory Equipment	6,498,588	170,325	6,668,913
Book	577,731	25,005	602,736
	7,912,509	195,330	8,107,839
1992	7,853,317	59,192	7,912,509

PAKISTAN MUSEUM OF NATURAL HISTORY - ISLAMABAD
DEVELOPMENT ACCOUNT
NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 30TH JUNE'1993

2. CAPITAL WORKING PROGRESS	1993	1992
	Rs.	Rs.
Opening balance	34,800,960	28,860,152
Pay and allowances (2-A)	941,294	975,556
Display Centre	80,996	11,182
Petrol Oil and Lubricant	37,875	56,250
Repair & Maintenance of Vehicles	91,097	14,842
Insurance and Token Tax	10,582	20,720
Repair and Maintenance of Equipments	6,000	--
	35,968,804	34,800,960
2.A PAY AND ALLOWANCES		
Pay and allowances	968,097	--
Less: House rent ceiling in advance	26,803	--
	941,294	--
3. ADVANCES AND PREPAYMENTS		
Paid to Consultant	13,603,105	--
Insurance of Vehicles	8,363	--
House Rent ceiling in advance	26,803	1,445
	13,638,271	1,445

PAKISTAN MUSEUM OF NATURAL HISTORY - ISLAMABAD
RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 30TH JUNE

93

CD ACCOUNT NO.7 U B L.

RECEIPTS	AMOUNT	TOTAL	PAYMENTS	AMOUNT	TOTAL Rs.
OPENING BALANCE					
Cash at United Bank Limited	7,037	7,037	PAYMENTS DURING THE YEAR		
Receipts during the year			PAYMENTS ON BEHALF OF PSF		
C.P.F Loans from PSF	84,330		C P F Loans	84,330	
Institutional Grant from PSF	23,900		American Books-Centre	23,900	
Haj Contribution from PSF	16,165		Haj Expenses	16,165	
C.P.F Final Settlements	62,338	186,735	CPF Final Payments	62,338	186,733
Sale Proceed from Vehicles	145,618		Telephone Expenses	2,498	
Haj contribution from PASTIC	15,000		POL/Vehicle repairs	4,525	
Refund against Rent.	2,800	163,418	Haj Expenses	15,000	
			Bank Charges	70	
			Deposited in SBP	145,618	167,711
			CLOSING BALANCES		
			Cash at UBL	2,744	2,744
		357,188			
					357,188

AUDITORS REPORT:

We have examined the Receipts and payments account of PAKISTAN MUSEUM OF NATURAL HISTORY ISLAMABAD for the year ended 30th June, 1993 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

53/8 Haider Road,
Rawalpindi.

(M HUSSAIN CHAUDHARY & CO)
CHARTERED ACCOUNTANTS

DATE. 10 FEB. 1994.

PAKISTAN SCIENCE FOUNDATION ACT 1973

**National Assembly of Pakistan
Islamabad, the 2nd February, 1974**

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 endowments; 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 within 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:-** (1) 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 occurring 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 of 1972), is hereby repealed.