

PAKISTAN SCIENCE FOUNDATION

ANNUAL REPORT



1984-85



Pakistan Science Foundation

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PAKISTAN SCIENCE FOUNDATION
Almarkaz F7/2
Islamabad

LETTER OF TRNSMITTAL

Islamabad

Dear Mr. Secretary

I have the honour to enclose herewith the Annual Report of the Pakistan Science Foundation for the Fiscal year 1984-85, alongwith its audited accounts, as adopted by the Board of Trustees for submission to the National Assembly as required by the Pakistan Science Foundation Act III of 1973.

With regards,

Yours sincerely,

Sd/-

**(Dr. M. D. Shami)
Chairman
Pakistan Science Foundation**

**Secretary,
Ministry of Science and Technology,
Government of Pakistan,
ISLAMABAD.**

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- (18) Mr. Abdul Raziq, Secretary (Irrigation) Government of Baluchistan, Quetta.
- (19) Dr. Tahir Hussain, Whole-time Member, University Grants Commission, Islamabad.

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LIST OF ABBREVIATIONS

Province

B	Baluchistan
C	Centre
F	Frontier
P	Punjab
S	Sind

Sponsoring Institutions

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

Disciplines

AGR	Agricultural Sciences
BIO	Biological Sciences
ENG	Engineering Sciences
MED	Medical Sciences

PHY Physical Sciences
CHEM Chemical Sciences
MATH Mathematics & Computer Sciences
EARTH Earth Sciences
OCEAN Oceanography
ENVR Environmental Sciences

INTRODUCTION

The Pakistan Science Foundation was established on June 30, 1973 under the Pakistan Science Foundation Act. No. III of 1973 (Annexure-I) "to promote and finance scientific activity having a bearing on the socio-economic needs of the country". Under the Act, the Foundation has been entrusted with the following functions:-

- a)
 - i) establishment of comprehensive scientific and technological information and dissemination centres;
 - ii) promotion of basic and fundamental research in the universities and other institutions, on scientific problems of national significance 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) development of learned bodies scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular;
 - 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 effort of the country.

- b) The Foundation shall also:-
- i) review the progress of scientific research sponsored by the Foundation and evaluate the results of such research;
 - ii) scientist pool
 - iii) cultivate liaison with similar bodies in other countries.

The activities performed under the above mentioned statutory functions are given in the chapters that follow.

CHAPTER - I

ACTIVITIES AND PROGRAMMES

The progress of work done by the Pakistan Science Foundation during the year 1984-85 under the various functions entrusted to it is summarised below:-

1. PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

i) Development of Facilities of PASTIC

Purchase of a micro-computer and re-installation of the printing facilities at the PASTIC National Centre were two important facilities which helped in promoting the activities of PASTIC during the year. Orders were placed for purchase of three micro-computers.

ii) Document Supply Services

Against 4407 orders received, 3802 orders were procured and supplied to various individuals and S&T organizations.

iii) National Science Reference Library

Three hundred and seventy four issues of 173 periodical titles were received by the National Science Reference Library. One thousand books of accession numbers of 2637-2747, 2778-2805, 2881-2997, 3022-3041 and 3094-3726 were classified and catalogued.

iv) Bibliographies Service

Twelve bibliographies were prepared during the period. A bibliography on Cancer was published.

v) Translation Service

Three research papers were translated into English from Russian, German and French.

vi) Pakistan Science Abstracts

Volumes 19 and 20 1979, 1980 of the Pakistan Science Abstracts were published. Abstracts for volume 21, 1981 were completed and forwarded for printing.

vii) Patent Information:

Fifty patent specifications were supplied to requesters. 120 industrial organizations in Baluchistan Province were addressed regarding the availability of patent information.

viii) Programming and Data Processing:

The section was started with a micro-computer. 12,300 patent specifications were entered on the computer and print out in ten disciplines were prepared as hard copy indexes of these patents. Authors & key work indexes of PSA, Vol. 22 and 23 were prepared using the micro-computer.

ix) Reprographic Section:

One offset printing machine and one Hermes Composing machine were added to the unit. The following printing jobs were undertaken:

Ministry of Sci. & Tech.	5 jobs;	95 pages;	32250 Impressions
Pak.Academy of Sciences	1 job;	34 pages;	5100 Impressions
Pak.Museum of Nat.His.	8 jobs;	148 pages	33619 Impressions
Quaid-i-Azam University	6 jobs;	185 pages;	99125 Impressions
Pak.Science Foundation	15 jobs;	324 pages	121020 Impressions
Foreign Service Tr.Inst.	2 jobs;	71 pages	23740 Impressions
N.T.R.C.	7 jobs;	120 pages;	53990 Impressions
PASTIC	13 jobs;	155 pages;	69250 Impressions
Total:	58 jobs;	1132 pages;	438394 impression

The details of orders received and supplied by PASTIC in respect of scientific information during the report period is as under :-

**PASTIC QUANTITATIVE DATA TABLE OF INFORMATION
SERVICES FOR THE PERIOD JULY 1984 - JUNE 1985**

No.of Orders Received	No.of Orders supplied	No.of Photo- copy pages supplied	No.of Bibl- graph- ies supp- lied	P r i n t i n g Job No.of impress- ions	Library 374	Patents suppl. 50	Indexed 12300	
4407	3802	41200	12	58	438394	374	50	12300

II. RESEARCH SUPPORT

During the year under report the Foundation carried out a number of programmes for the promotion of basic and fundamental research in universities and other institutions on scientific problems relevant to the socio-economic development of the country. These programmes include;

- (a) Grants to research projects submitted by individuals or group of scientists in the universities and research Institutions through out 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) Grants to Research Projects Submitted by Individuals Research Workers or Groups of Scientific Workers.

Research support is the Foundation's Principal programme for the promotion of basic and fundamental research having relevance to the socio-economic needs of the country.

During the period under report, thirty seven (37) projects requesting for funds totalling Rs.15.723 million, were received by the Foundation. Sixty four (64) project proposals at various stages of their processing, were brought forward from the previous year. Thus in all one hundred and one (101) project proposals remained under active consideration of the Foundation. These proposals were examined by the experts in the relevant fields in the light of their scientific merit and relevance to the national needs according to the criteria laid down by the Foundation. The criteria for research are (a) Competence of the Scientific personnel available to carry out the research (b) Institutional Capability i.e. availability of requisite equipment and library facilities (c) Scientific merit of the proposed research (d) likelihood of completion of the project within the stipulated time. Each proposal, after getting a favourable review report by an expert in that particular field, is placed before the Technical and other Committees of the Foundation. During the year, only twenty four (24) project proposals succeeded in getting the approval of the Foundation at an estimated cost of Rs.5.88 millions.

Discipline-wise distribution of grants made by the Foundation during the past eleven years is shown in Table-I.

RESEARCH PROJECTS

Summaries of the research proposals, sanctioned during the year 1984-85 are given below:-

1. AGRICULTURAL SCIENCES

P-PU/Agr (81)

Title: *Effects of Aflatoxins in Poultry*

Aflatoxins are common contaminants of food grains and agro-industrial by-products stored under faulty conditions. Recently its presence has been indicated in the poultry feeds. Aflatoxin contaminated foods are toxic, carcinogenic and immunosuppressive in almost all species of animals, man and poultry. Human beings may be exposed to the danger of these toxins by eating contaminated food or meat and milk of animals eating contaminated feeds.

The present proposal aims at finding out the toxin contents of different commercial poultry feeds and the effects of Aflatoxins in poultry under our environmental conditions.

The results will help in formulating recommendations regarding the minimum permissible levels of Aflatoxins in poultry feeds to safeguard the health of the workers in the poultry industry as well as that of consumers.

P-PU/Agr (86)

Title: *Studies on Phenology, Germination Ecology and Control of Some important Weeds of Wheat*

Weeds are undesirable plants growing where they are not wanted. They compete with agricultural crops for light, water, nutrients and space and cause reduction in the yield of these crops. Little work has been undertaken in Pakistan on this crucial problem.

The Principal Investigator in an earlier study, supported by PSF, has already undertaken some work on the nature of weed-wheat competition and nutritional losses alongwith field studies on reproductive potential, frequency, density and biomass of some important weeds of wheat.

The present proposal aims at studying phenology, seed germination and early seedling growth in relation to various environmental factors of some important weeds of wheat both in the irrigated and barani areas. It also aims at assessing effects of some well known herbicides on these weeds.

TABLE-1
SCIENTIFIC RESEARCH PROJECTS SANCTIONED DISCIPLINE
WISE DURING JULY, 1973 TO JUNE 1985

DISCIPLINE	1973-81		1981-82		1982-83		1983-84		1984-85		Total	
	No.of Schemes	Amount Sanctioned	No.of Schemes	Amount Sanctioned	No.of Schemes	Amount Sanctioned	No.of Schemes	Amount Sanctioned	No.of Schemes	Amount Sanctioned	No.of Schemes	Amount Sanctioned
Agricultural Sciences	23	4.129	1	0.244	2	0.368	2	0.645	3	0.655	31	6.385
Biological Sciences	50	6.191	4	0.891	5	0.869	3	0.580	4	1.254	66	9.785
Chemical Sciences	64	7.737	6	0.681	8	1.173	3	0.618	3	0.314	84	10.523
Earth Sciences	12	1.212	-	-	1	0.186	-	-	3	0.670	16	2.068
Engineering Sciences	5	0.460	-	-	2	0.620	-	-	1	0.167	7	1.247
Environmental Sciences	13	1.454	1	0.100	-	-	2	0.183	-	-	16	1.937
Mathematical Sciences	4	0.234	1	0.016	-	-	-	-	-	-	5	0.250
Medical Sciences	29	2.283	10	1.794	-	-	3	0.824	7	1.857	49	6.758
Oceanography	3	0.456	-	-	-	-	1	0.820	-	-	4	1.280
Physical Sciences	17	3.055	1	0.096	2	0.503	-	-	3	0.970	23	4.624
Total:-	220	27.21	24	3.822	20	3.719	14	3.871	24	5.887	302	44.857

An adequate knowledge in the wheat biology, and effects of herbicides thereon will help to contain the problems to some extent.

S-KU/Agr (88)

Title: *Studies on Culturing of Meloidogyne Incognita and Heterodera zae on Excised Roots of Tomato and Corn*

Root knot nematode (M.incognita) and Corn cyst nematode (Heterodera zae) are causing serious damage to many high yielding tomato varieties and corn respectively.

The present proposal aims at screening and development of local nematode resistant varieties of tomato and corn plants by culturing these parasitic nematodes on the explant root tissues using suitable media under axenic conditions and testing the resistance of these plants.

These studies will provide opportunity to the biologists to develop and select nematode resistant call lines and evaluate various nematicide under controlled conditions in laboratory for other crops.

2. BIOLOGICAL SCIENCES

C-PMNH/Bio (123)

Title: *Ecotaxonomic Evaluation of Valuable Plants of Baluchistan*

The province of Baluchistan is very rich floristically and has attracted the attention of ecologists and botanists for many years. Many wild plants have been in use by the locals for medicinal and other purposes for centuries. Unfortunately, the studies conducted so far do not include all the useful plants of the province.

This project aims at conducting a thorough survey of the Baluchistan province for collection and identification of the wild plants. The useful plants will later on be sorted out and enlisted for further investigation. The extent of use of various plants by the locals for different purposes shall also be investigated. Moreover, the possible factors suspected for the decline of various useful species and introduction of new valuable species shall be worked out.

The study will have great socio-economic impact on the development of Baluchistan because it will provide the necessary data about the existing valuable plants and the possibility of introducing new species.

PMNH/Bio (124)

Title: *Interspecific Diversity of phytophagous Hemiptera in different Agro-ecological Zones of Pakistan.*

The Hemipterous fauna (Plant sap-sucking insects) of Pakistan is well known systematically. The small size of these insects has facilitated their adaptation to new environments created by introducing new plant species/variety and planting them densely.

The present proposal aims at investigating the Hemipterous species diversity in all the agro-ecological Zones of Pakistan by consulting the existing literature and through field survey. The study includes collection, summarization and analysis of data on vegetation, crops, Hemipterous fauna, soil, physiography and climate in different Agro-physiological Zones.

It is hoped that the study would provide data for assessing the extent to which the distribution of adults and immatures alongwith all attributes of their community structure are influenced by vegetation and the cropping pattern.

S-KU/Bio (132)

Title: *Extrachromosomal Elements for in Vivo Genetic Engineering*

A bacterial cell has a chromosome that carries all the essential genes required for the survival of the cell. However, certain bacteria also carry additional DNA structures, referred to as extrachromosomal elements, plasmids or episomes that carry additional genes and can be beneficial for the cell in various ways.

Genes from a plasmid can some times jump from their place and be inserted into certain other DNA structures. Such genes are called transposons.

This proposal aims at isolation of extrachromosomal elements and transposons from a wide variety of bacterial genera such as those involved in plant pathogenecity, animal and human pathogenecity, degeneration of chemicals, nitrogen fixation ect.

The results are expected to find plasmids with a wide host range and transposons with novel set of genes to be used for the manipulation of the genomes bacteria having agricultural and industrial importance.

Title: *Pest Status, Food Preferences and Control of Termites of Pakistan.*

Although the termite fauna of Pakistan has been fairly well explored, yet there is still need to know about the species which are termed as serious pests. The status of a termite species as a pest may change with the change of environment.

The present project aims at studying the pest status of the termite species occurring in Pakistan, by conducting an extensive survey to identify the species causing damage to the structural wood and major agricultural crops. It further aims at studying the relative resistance of different timber species to termite attack and know the effects of wood extracts on termites. It also aims at testing the soil insecticides belonging to non-chlorinated hydrocarbon group and anti-moultants against termites.

The results will help in identifying resistant, semi-resistant and susceptible timbers and finding ways to control the species of termites which are serious pests.

3. CHEMICAL SCIENCES

Title: *Studies on the Hypcholesterolemic Effects of Allium sativum Linn and Scientific Investigation of its Protective Action Against Coronary Heart Disease*

Increased incidence of coronary heart diseases in the country calls for developing newer, cheaper and more effective therapeutic agents both synthetic and of herbal origin. *Allium sativum* linn (garlic) has been reported to exhibit hypcholesterolemic effects in animals and man but the findings are not consistent. There is need to confirm the beneficial effects before a large scale use of garlic can be recommended for this purpose.

The proposed study aims at studying the hypcholesterolemic effects of garlic and garlic constituents. Initially tests will be conducted on chickens with induced atherosclerosis. After establishing a beneficial effect in the animals, studies will be conducted in normal human volunteers and in volunteer patients with mild coronary heart diseases. The active constituents of garlic will be isolated and identified by well known chemical techniques and with the UV; IR; NMR and mass spectrometry wherever needed.

It is expected that the result of the study will provide a means for reducing the risk of coronary heart disease.

P-CSIR/Chem (151)

Title: *Study of the Essential Oils of the Species of the Plant Family Umbelliferae of Pakistan*

Essential oils find an extensive application in the perfumery, cosmetics, soaps, detergents, pharmaceutical and food industry. Essential oils of the plant family Umbelliferae constitute important items of trade and industry and Pakistan is quite rich with respect to the cultivated growth of these plants. There is dire need to investigate these plants for their oil contents and utilizing them at industrial level.

The proposed project aims at studying the species of family Umbelliferae for their contents of essential oils with potential industrial utility and to study the chemical composition and physical properties of these oils.

It is hoped that as a result of this study the basic knowledge about these plants will be achieved which can be applied for exploiting the commercial potential thereof.

C-QU/Chem (154)

Title: *Development of Aminoacid Ester Hydrobromide Salts as Antimicrobial Antimoth and Anticockroach Agents.*

Some amino-acids are known to increase antibacterial action of blood against E-coli, enhance blood sugar level, show toxicity and inhibit growth of both gram-positive and gram negative organisms. Some metal complexes of amino acids are antibacterial agents. Hydrobromide salts of alkyl esters of various classes of aminoacids have been synthesised by using, primary secondary or tertiary alkyl alcohols.

The proposed study aims at synthesising water soluble aminoacid ester hydrobromide salts and test their antimicrobial activity on some pathogenic micro organisms. The aminoacids shall include glycine, alanines, aminobutyric acids, lysine, tyrosine and threonine. The main objective of the study is to develop non-antibiotic drugs that may serve as an alternate source of medication to those showing resistance or allergy to conventional antibiotics. Moreover, the study aims at studying moth or cockroach repellent activity of the synthesised compounds.

The study is of applied nature and result producing. The development of either bactericidal agents or repellents shall have socio-economic impact.

4. EARTH SCIENCES

P-PU/Earth (27)

Title: *Geology and Mineralogy of Selected Pakistani Ophiolites*

Ophiolites comprise a relatively recently described rock association which has received numerous attention in the current geological literature. Ophiolites form beneath the bottoms of oceans towards their deeper central parts and are brought on land by the earth natural processes. Thus the present day ophiolites represent the ancient oceanic lithosphere and are samples of very deep earth from below the mid oceanic parts.

Pakistan exhibits ophiolitic rocks at 12 different locations in a belt that passes through the Northern, North-Western, and Western ranges. The Principal Investigator of this project has already undertaken some study on these ophiolites and has come up with many new and interesting geological features.

The present project aims at undertaking the work further by preparing large scale maps of selected ophiolite bodies, conduct mineralogical study on rock samples and describe petrography and texture thereof.

The data obtained shall be used for comparisons of the already established features of Pakistani ophiolites and those out side Pakistan in different parts of the world. The results may yield fresh ideas on tectonics, metamorphism and emplacement of these ophiolites.

C-PMNH/Earth (28)

Title: *Geology, Stratigraphy and Rodent Fauna of Late Miocene Sediments of Jalalpur Area, Potwar Plateau, Pakistan*

The potwar plateau is an elevated area of some 20,000 k.m. bounded to the south by the salt range, east and west by the Jhelum and Indus rivers respectively and North by the Kala Chitta and Margalla hills. An earlier study of a small mammal fauna from a locality near Jalalpur, southern Potwar, shows nine species of five rodent families. This high diversity of the fauna shows that a migration route may have existed between the Indo-Pak subcontinent and Africa through Arabia during the middle Miocene. It also aims at correlating some of the major fossiliferous area and try to reconstruct past habitats and environments.

The present project aims at studying the previously studied localities with much details and to locate new fossiliferous

rodent localities and map them stratigraphically to define lithological units of the Siwaliks.

This will give an insight into the rodent origin and help to understand the geographic, climatic, habitat and faunal history of the Indian Ocean region during the Miocene and Early Pliocene.

C-PMNH/Earth (29)

Title: *Petrography of Coals from Salt Range and Makarwal Area*

Due to its vital role in the development of Industry and as an alternative to oil, coal is gaining importance once again because of the high prices of oil. But coal based industry in Pakistan is facing a difficult problem of coal impurities (Mineral matter). This mineral matter determines the composition of the mine dust and may be responsible for certain diseases. Moreover, it plays an important role in determining the suitability of the coal as a fuel.

The present project aims at studying the inert incombustible mineral matter of coal and associated sediments, collected from salt range and Makarwal area, and determining its chemical composition.

A systematic study of the mineral matter and associated sediments would reveal the increasing or decreasing trends of the minerals in particular geological horizons. This would give a useful indication to mine the coal in those particular directions.

6. ENGINEERING SCIENCES

P-CSIR/Eng (20)

Title: *Development of Fluidised-Bed Coal Combustion System Based on Low Grade Coal for the Supply of Clean Heat for Industrial Use*

Pakistan has considerable coal deposits but unfortunately it is a low grade coal containing undesirable high percentage of ash and sulphur. These two constituents render the coal unsuitable for industrial use. There is need to develop special techniques for utilizing low grade coal.

The present project aims at developing a technique known as fluidised-bed coal combustion system. Expertise for operating the system will also be developed. Different samples

of indigenous coal will be prepared and tested and data collected for further analysis.

The data generated as a result of this project will be utilized

7. MEDICAL SCIENCES

P-PMI/Med (91)

Title: *An Etiological Study of Urolithiasis in D.G. Khan Muzaffargarh and Bahawalpur*

Urolithiasis is very common in D.G. Khan, Muzaffargarh and Bahawalpur Districts. Recurrence of the disease is more than likely and it is well known to doctors practicing in these areas.

The present project aims at studying the ethiological factors involved in the high rate of stone disease. For this purpose serum and urine will be analysed for abnormal quantities of certain crystalloids. Appropriate preventive measures shall also be suggested.

Proper evaluation and management may lead to decreased morbidity and lower recurrence rate.

S-JPMC/Med (98)

Title: *Byssinosis in Cotton Industry of Sind*

Production of dust in the cotton textile industry is unavoidable but specific conditions like climate, factory construction, dust exhaust system and quality of the cotton may lead to below or above average prevalence. Studies into the diseases due to this dust have shown that there exists one histamine releasing agent in this dust which directly effects human lungs and causes Byssinosis..

The purpose of this project is to measure and analyse the cotton dust in various textile ginning factories of Sind and evaluate the prevalence of diseases both acute and chronic. For this purpose a detailed survey shall be conducted during which general information regarding the environment in the mills, construction type of the mills, type of the machine used, quality of cotton used, work conditions for workers and managerial staff, health cover facilities, and detailed physical examination, shall be collected and the data shall be analysed.

The study will give a clear picture of the health hazards and risks to the lives of the workers in these factories. Future health management techniques can be based on this study.

S-DMC/Med (102)

Title: *To Study the Present Pattern of Prevalence Etiology, Clinical Presentation and Management of Lower Gastro-intestinal Disorders*

Patients suffering from gastrointestinal disorders form a large percentage of cases treated in hospitals. However, it is felt that the pattern of G.I. diseases is changing in Pakistan from the conventional infective disorders due to the change in the socio-economic conditions and living style of people. Population flux from rural to urban areas, increased awareness of basic hygiene and change in the eating habits from unrefined to refined food has developed a pattern of diseases resembling those in the Western countries.

The present project aims at conducting a thorough study of lower G.I. diseases treated in Civil Hospital Karachi and compile the data for analysis.

The results will guide the medical practitioners regarding the proportion, epidemiology, etiology, clinical manifestation and preventive and curative treatment of the various diseases.

S-DMC/Med (103)

Title: *Early Detection of CaCx Using Colpo- Microscope and Comparing with other Methods.*

Diagnosis of Carcinoma cervix with the assistance of Conebiopsy is a common procedure. The cone however, removes an un-necessarily large area of normal tissue and in some cases the cone proves inadequate. Selective biopsy using Colposcopy allows the identification of area of likely intra-epithelial neoplasia with considerable accuracy. Moreover, it does nominal damage to normal tissue.

The present project aims at introducing in Pakistan the diagnosis of Carcinoma Cervix at a pre-invasive stage with the help of Colpo-microscope and comparing the results with those of other methods like hysterectomy or cone biopsy.

This will help in eliminating the hazards of pregnancy related to cone biopsy.

Title: *Maternal serum Alpha Fetoprotein Levels in Second Trimester of Pregnancy and its Correlation with Prenatal Diagnosis of Impending Fetal Death and open Neural Tube Defects*

Maternal serum Alpha Fetoprotein (AFP) is the protein in the Circulation of the early fetus, being synthesized in the yolk sac, liver and gastrointestinal tract. Its levels are found to rise progressively at about 12-weeks of gestation and virtually reach base line levels one week after delivery. If the concentration of AFP in Amniotic fluid is sufficiently high, spill over effects will occur producing abnormally elevated levels in maternal serum. A sharp rise has been reported in maternal serum with placenta praevia, molar pregnancy, triploid fetus and ectopic pregnancy due to break down in the fetal maternal barrier. Measuring AFP levels in the 2nd trimester is therefore an effective screening test.

The present study aims at introducing maternal serum AFP screening for pregnant women for identifying hazards of pregnancy. For this purpose AFP levels in all the pregnant women will be measured, which will give assessment in both the complicated and uncomplicated fetal neural tube defects.

This study will help in the reduction of neural tube defects at birth and reduction in the number of children handicapped by spina bifida.

Title: *General Anesthetics Respiratory Function and Gamma Aminobutyric Acid (GABA) Levels in Rat-Brain.*

General anesthetics have been in use in the operation rooms for more than a century but no satisfactory, empirically verifiable theory explaining the mechanism of these agents has so far been proposed. All hypothesis, concerning the mechanism of anesthesia, are oriented physically rather than biochemically and are therefore hard to test in Laboratory. Some hypothesis have proposed the involvement of Gamma Amino Butyric Acid in the action of these anesthetics.

The present study aims at determining the manner in which anesthetics exert their effect on GABA level in the brain and the role GABA plays in the neural control of respiration in rodents.

It is hoped that as a result of the study a model system for the dynamics of general anesthetics pharmacology will be developed which can aid in the rational use of these agents. Moreover, it will help the anesthesiologists deal with the occurrence of anesthetics overdose, such as respiratory depression.

P-EGMC/MED (107)

Title: *Colorectal Biopsies in the Diagnostic Evaluation of Large Bowel Disease.*

Large Bowel disease generally presents with symptoms of diarrhoea or dysentery and less commonly as constipation or changing bowel habits as in malignancy. These symptoms are mostly attributed to parasitic or bacterial infections, but ulcerative colitis or chronic disease is also seen. Diagnosis with the help of stool examination or Barium studies may not be possible or helpful in many cases. Colorectal biopsy can give better results in the diagnosis of large bowel diseases.

The present project aims at evaluating the causes of chronic diarrhoea and dysentery or other diseases of large bowel with the help of fibrotic colonoscope to establish the diagnosis of specific infections like Amoebic Coli and non-specific condition as ulcerative colitis and chronic disease. It also aims at establishing a co-relation between the dietary habits and morphological changes in the large bowel mucous of people with chronic diarrhoea and dysentery.

This will help to find out the true incidence of diseases which are common or rare and to detect malignancy at an early stage.

8. PHYSICAL SCIENCES

S-KU/Phy (41)

Title: *Study of Transport Properties in Solids Particularly II-VI Compounds*

Solar energy is a limitless, cheap and clean energy source. However, its full development requires the use of material which may be cheap, abundant and reliable enough to render the process-cost profitable.

The present project aims at studying the transport properties of some solids specially II-IV Compounds which include ZnSe, ZnS, Cd etc. These compounds are already being used in electroluminescent devices but their efficiencies are low and need further investigations which is subject matter of the proposed study.

As a result of the study III-IV Compounds which are relatively more costly and not available freely, will be replaced by II-VI Compounds which are cheaper and available abundantly.

P-IU/Phy (43)

Title: *Feasibility Study of Wind Energy Utilization in Cholistan*

Cholistan desert is a vast area situated in Bahawalpur Division. Supply of conventional energy in this area is difficult and expensive due to lack of roads. It is, therefore, important that we should harness natural sources of energy like Wind and Solar energy to supply water and electricity.

The present study aims at measuring the meteorological parameters like Wind speed & direction, average temperature, relative humidity, rainfall etc. Monthly averages of these parameters will be used to assess the feasibility of the utilization of Wind energy for water pumping and generation of electricity.

If the feasibility report is favourable, this project is expected to help in the development of the Cholistan desert to a great extent.

C-QU/Phy (44)

Title: *Deep Level Transient Spectroscopy of Semi-Conductors Material*

Semi-conductors form the basic material in the modern electronics industry. Deep level investigations are one of the most important areas of semi-conductors, since these levels affect almost all the important physical processes in electronic devices.

The present project aims at establishing a deep level transient spectroscopy (DLTS) system for a comprehensive study of the Light Emitting Diodes (LED) and measuring deep level parameters of home grown Si with known impurities.

A number of organizations who are preparing electronic devices shall greatly be helped by the finding of the proposed study.

(B) Institutional Support

Pakistan Science Foundation assists the universities in the provision of equipment, chemicals, literature etc. to research workers who for one reason or another, are unable to obtain these from their own institutions and it is established that

such support would lead to quick progress of research of national significance. The emphasis is on (i) fostering and equipping multi-disciplinary research units directed towards the solution of areas of high research priority; (ii) provision of equipment, literature, staff training facilities and improvement of data processing, documentation and information systems and similar facilities which would build up research capacity of selected research Centres and units.

During the current year an amount of Rs,1,98,916/- was sanctioned to various Universities/R&D organizations for the purpose indicated above (Annexure-III)

III. UTILIZATION OF RESEARCH RESULTS

During the report year no project for the utilization of research results was received by the Foundation. Hence no grant was sanctioned/released under this head.

IV SCIENCE CENTRES

The activities of Pakistan Science Foundation for the popularization of science in the country include two major programmes namely, the establishment of National Museum of Natural History at Islamabad and promotion of science among masses through organising Science Fairs, Popular Science Lectures, Scientific Films and Publishing of essays in National dailies on scientific topics of interest to common people. A summary of these programmes is given below:-

1. ESTABLISHMENT OF PAKISTAN MUSEUM OF NATURAL HISTORY

The Pakistan Museum of Natural History is a Government approved project of the Foundation. Its offices, laboratories and display halls are presently located in Sector F-7, Islamabad. The PC-I for the Phase-II of the Museum was approved by the CDWP in 1984. It has now been submitted for the ECNEC approval.

The three scientific divisions, namely Botanical, Zoological and Earth Sciences, alongwith the Design Section are functioning to achieve the Museum's approved objectives. The progress made by the Museum during the report period is summarised below:-

A. BOTANICAL SCIENCES DIVISION

Reference Collection

Collection of Flora: Field trips of Quetta, Loralai and Ziarat districts for collection of plant specimens were undertaken. In addition, several one day trips to Galiat areas were made for plant collection. These field works provided a collection of approximately 2500 specimen.

Research

More than 2800 plant specimens were properly identified, dried, disinfected, labelled and mounted for accession into Herbarium. Ecological and other pertinent information collected on each plant in the field have also be transferred on its respective Herbarium sheet.

Research

The following research studies have been completed during the report period.

- a) Phytosociological studies in Zongilora, Hazarigans and Maslakh Range.
- b) Eco-taxonomic studies on the flora of Malakh Range.

A number of research studies on taxonomy, ecology and economic importance of flora of Baluchistan N.W.F.P. and Islamabad are in progress. These projects are as follows:-

- Checklist of economic plants of Baluchistan.
- Algal Flora of Islamabad.
- Phyto-sociological studies of Margalla Hills.
- Alleopathy of common weeds of Islamabad.
- Trials to enhance salt tolerance in different vegetables.
- Taxonomy of Mycoflora and Acanthaceae of Islamabad

Public Awareness Programmes:

Exhibits/Dioramas: Technical assistance and specimens were provided to the Design Section for the preparation of the following exhibits and dioramas:

- Cultivation of Pakistan
- Food chains
- Solar system
- Planet earth

Service Rendered to other organizations:

Nearly 1000 plants were identified for the College for Women, F-7/2, the Margalla College for Girls and the Boys College, H-8, Islamabad.

B. EARTH SCIENCES DIVISION

Reference Collection:

Collection of Rocks, Minerals, and Fossils: Field work was carried out in South eastern Hazara, southern Kala Chitta Range, and Chakwal District. The Jhalar-Sir Burjianwala area in southern Kala Chitta Range and the Dhok Thalian-Khokher Zer area in Chakwal District have been investigated in detail 200 rock specimens and 45 fossil specimens have been collected.

Research:

- a) 300 rocks, minerals and fossil specimens were identified and accessioned alongwith information on their locality, mode of occurrence, geological formation and age.
- b) Detailed petrographic and minerological analyses of the Cambrian rocks of the Salt Range are completed. The studies involved preparation of 100 thin sections and eight random-powder for X-ray diffraction of about 100 sedimentary rock samples.
- c) Microfossils study of the Tertiary rocks of the Western Salt Range is based upon 17 samples. Fossils belonging to eight genera and twelve species of Ferminifera have been identified.
- d) In collaboration with the National Institute of Oceanography (Karachi) clay mineral analyses of Indus Delta sediments of the Karachi Coast is initiated.
- e) The taxonomic study of the Rodents (Mammalia) fauna of Jalalpur area is completed. Nine species of five genera are identified; three species are new.

Display of Specimens:

New fossils, rocks and mineral specimens are added to the exhibits. Technical assistance and additional specimens are provided for various Earth Sciences exhibits such as Pre-historic Wildlife of Pakistan, the Human Story and Marine life of Pakistan.

Service Rendered to other Organizations:

The Director was one of the members for the Curriculum revision of Geology being taught at the University of Azad Jammu and Kashmir.

Training:

The Director, Earth Sciences Division participated in the training programme on Oceanography organized by the National Institute of Oceanography, Karachi in collaboration with the Hawaii University (USA).

D. ZOOLOGICAL SCIENCES DIVISION

Reference Collection:

Collection of Fauna, Field trips in various localities in the Federal area of Islamabad and Sialkot, Lahore, Gujrat Districts were made for collection of Fish, Amphibia and Reptile specimens. Heteroptera bug collections were made from Taxila, Lehtrar and Galiat areas. These field trips added at least 345 fishes and amphibians and 54 house sparrows to the zoological collection of the Museum.

Research:

Préservation, identification and cataloguing of amphibians, fishes, and reptiles collected during the above mentioned field trips were completed.

Some of the research studies completed during this year are as follows:-

- Checklist of fresh water ciliated protozoa.
- Taxonomy of the fishes of Baritius vagza complex.
- Revision of the genus Mormidella.
- Enviromental factors on pheromone trap catches of Heliothis armigera.
- Nymphal systematics of odonata of Pakistan.

Research Projects in progress are:

- Taxonomic study of the sub-genus Rana (Rana)
- Morphometric study of common house sparrows.
- Experimental studies of reproductive parameters in the Herpestes edwardsi (mongoose family)

Public Awareness Programmes:

Exhibits/Diorama: Stuffed animals and technical assistance and write ups were provided to the Design Section for developing exhibits on Reptiles and Migratory water birds.

Service Rendered to other Organizations:

One deer was stuffed for the Punjab Wildlife Conservation Department.

Training:

The Curator and a Research Associate of the Zoological Division participated in the "National Training Course on Modern Methods of Gene Conservation" organized by the Pakistan Science Foundation and National Agriculture Research Council. The Curator attended training course on "Oceanography" jointly sponsored by the National Institute of Oceanography and the Hawaii University (USA).

Dr. G. Zug Smithsonian Institute of USA gave a lecture on Mureology with particular emphasis, on mammals preservation and curation.

D. DESIGN SECTION

Public Awareness Programme:

Exhibits/Dioramas:

The following exhibits/dioramas are designed for display in consultation with the scientists of the three divisions who supplied the specimens and the scientific text:

- Reptiles in their habitat.
- Migratory birds in their habitat with routes.
- Solar system and planet earth.
- Pre-historic wildlife of Pakistan.
- The Human story.
- Cultivation of Pakistan.
- Earthquake and plate tectonics.
- Rocks of Salt Range areas.
- Installation of Giraffe Skeleton.
- Evolution of higher mammals.
- Five tables with trays designed, constructed and installed to identify rocks, minerals, and fossils, in the Children Discovery Room.

Museum Tours:

Arranged visits of 20 educational institutions, Educational Quiz Sheets for different age groups were also prepared.

Services Rendered to other Organizations:

- Designing and execution of graphic materials for PSF conferences training programmes.
- Designing of school laboratories prepared on behalf of PSF
- Designed and supervised Science Caravan's vehical body construction for Pakistan Science Foundation.
- Designed advertisement patterns and decorated interior of the Committee Room, Hydrocarbon Development Institute of Pakistan, Islamabad.
- Designed Monogram for Silicon Technology Institute.
- Visual and art work prepared for the cover of the "Journal of Geology" for University of Azad Jammu and Kashmir.

TRAINING:

Miss Samiya Mujeeb, Senior Artist, proceeded to England on British Council Scholarship for training in Interior and Exhibition Designing.

2. SCIENCE PROMOTION

The programmes supported under the science promotion activities are detailed below:-

i) Science Fairs: The following science fairs were financially supported by the Foundation:

- 3rd Annual Science Fair organized by the Board of Intermediate and Secondary Education, Sargodha. A grant of Rs.35,000/- was provided.
- Annual Science Fair organized by the Board of Intermediate and Secondary Education, Quetta. A grant of Rs.40,000/- was provided for the purpose.

ii) Summer School

A National Summer School for Talented Students was organized by the National Education Council and Boards of Intermediate and Secondary Education of Pakistan in July & Aug., 1984. The purpose of the School was to expose talented students to the accomplishments and potential of Scientific Research and to provide them incentive for career in scientific research. Pakistan Science Foundation contributed Rs.40,000/- towards expenses of the Summer School.

iii) Popular Lectures

The Foundation arranged the lectures of a number of local and visiting scientists during the report period.

iv) Popular Articles

As many as sixteen articles/features on important scientific topics were got published in various National dailes.

v) SCIENTIFIC SOCIETIES/LEARNED BODIES

Promotion of learned bodies, scientific societies associations and academies, engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular:

The Foundation is making annual grants to the established learned bodies and scientific societies and endeavouring to provide all possible assistance to the new ones. Annual grants amounting to Rs.5,85,000/- were released during the year to various non-governmental scientific societies and learned bodies for the achievement of their approved objectives (Annexure-IV)

Special grants totalling Rs.4,25,000/- were sanctioned to various scientific societies/institutions for their publication programmes (Annexure-V).

vi) SCIENCE CONFERENCES:

The organization of Periodical Science Conferences, Symposia, Seminars, Workshops etc.

Grants totalling Rs.2,60,350/- were given to various scientific organizations and institutions towards meeting expenses of scientific Conferences, Symposia, Seminars, Workshop, etc. A brief account of these events is given below:-

- a) The First Pakistan Geological Congress was organized at Lahore in October, 1984 by the Institute of Geology of the Punjab University. It was attended by eminent geoscientists from all over Pakistan as well as abroad. The Congress provided excellent opportunity for mutual discussions among researchers in geophysics. Pakistan Science Foundation contributed Rs.25,000/- towards conference expenses.

- b) A training course of "Biological Control of Pests" was organized by the Commonwealth Institute of Biological Control, (PARC-CIBC Station) from 24th to 31st October, 1984 in connection with its Silver Jubilee celebrations. The Workshop included lectures, demonstrations, practical classes and field trips as part of practical training in integrated pest management. Pakistan Science Foundation contributed Rs.10,000/- towards expenses of the training course.
- c) The Second National Meeting on "Plant Tissue Culture" was organized by the University of Peshawar Peshawar, from 25th to 27th January, 1985. Participants discussed the relevance of plant tissue culture to local agricultural problems besides reviewing the progress of research in the area. A grant of Rs.10,000/- was made by the Pakistan Science Foundation towards meeting expenses of the event.
- d) An International Symposium on "Biologically Active Macromolecules" was organized by the Department of Chemistry of the University of Baluchistan at Quetta in October, 1984. The Symposium provided opportunity to Pakistani Scientists to learn about recent development and current research being undertaken in different countries in different areas of Biochemistry and Immunology towards the understanding of the molecular basis of cellular functions. Pakistan Science Foundation contributed Rs.61,800/- towards the expenses of the Symposium.
- e) An International Workshop on "Heat and Mass Transfer in Building Structures" was organized by the Department of Mechanical Engineering of the University of Engineering & Technology, Lahore in July 1984. The aim of the Workshop was to collect information on processes and modes of heat transfer in buildings and structures and on ways of reducing losses and thereby saving energy. Pakistan Science Foundation granted Rs.10,000/- for publication of proceedings of the Workshop.

- f) An update Course on Topics in Modern Biochemistry was organized by the Pakistan Society of Biochemistry at Karachi in Feb., 1985. The course was attended by many teachers of biochemistry from Medical Institutions and Universities. Formal presentations and small group discussions at the workshop were directed at providing up-to-date information on biochemical research to participants. Pakistan Science Foundation granted Rs.20,000/- towards the expenses of the course.
- g) A Seminar on Hydrotechnical Engineering was organized at Peshawar by the Peshawar Centre of the Institution in March, 1985. Participants included engineers from all over Pakistan as well as Canada. Important technical papers on the subject were presented. Pakistan Science Foundation granted Rs.20,000/- for the Seminar.
- h) The 10th International Summer College was organized at Nathiagali by the Pakistan Atomic Energy Commission in collaboration with the Centre of Basic Sciences, University Grants Commission. It commenced from 27th June and lasted for 3-weeks. The college was attended by eminent physicists, including researchers and University teachers. Pakistan Science Foundation granted Rs.25,000/- towards organization of the Summer College.
- i) A training course of New Methods of Gene Conservation was organized by Pakistan Science Foundation in collaboration with Pakistan Agriculture Research Council, Islamabad. Pakistan Science Foundation granted Rs.3,550/- to meet partial expenses of the course.

VII EXCHANGE OF VISITS

Exchange of visits of Scientists and Technologists with other countries.

A major weakness of Pakistani science is its isolation. Due to lack of contact with the scientists in advanced countries and the absence of intellectual inter-action, many of our scientific workers become obsolescent and lose enthusiasm, freshness and spontaneity. There is an urgent need to end the isolation from the world of science in Pakistani science and scientists. Our scientific workers should be able to meet their counterparts in the advanced societies and visit international and regional research centres and universities of repute.

Grants totalling Rs.1,20,006/- were given to five scientists (Annexure-VII) to attend International Conferences/Symposia and to meet their counterparts in Institutions of higher learning in advanced countries.

VIII. AWARDS AND FELLOWSHIPS:

Awards, prizes and fellowships are granted by PSF to individuals engaged in developing processes, products and inventions of economical importance, in order to provide incentive for valuable Scientific Research.

The Foundation did not receive any proposal of Scientific merit during the year under report. Accordingly no award was sanctioned under this programme.

A grant of Rs.2,000/- was however given to the University Grants Commission for prize distribution among talented students.

IX SURVEY AND STATISTICS

During the report period no project on Survey and Statistics was received by the Foundation. Hence no grant was sanctioned/released under this head.

X. RESEARCH EVALUATION

The Foundation evaluated the following Technical/fiscal reports received during the report period, as per procedure laid down for reviewing the progress of Scientific Research supported by the Foundation and evaluating the results of such research.

i) Semi-Annual Reports:

Twenty six semi annual reports for the 1st half of each project year were received and scrutinised by the Science Wing of PSF to assess the interim progress of these projects.

ii) First and 2nd Annual Reports:

Fourteen 1st annual and five 2nd annual reports submitted by the Principal Investigators, after initial scrutiny by the Science Wing, were sent for detailed evaluation to active scientific workers, in the relevant fields of study. These progress reports were then submitted to the respective Technical Committees alongwith the evaluation reports of the expert concerned for consideration which were ultimately accepted by the Committees.

iii) Final Reports:

Eleven final reports in respect of the completed projects received during the report year were also sent to subject experts for evaluation. These final reports alongwith their evaluation by the subject experts were submitted to the relevant Technical Committees for adoption.

XI PSF SCIENTISTS POOL:

Bio-data of several Pakistani Scientists living abroad and interested in returning to Pakistan were circulated to various Universities and research organizations in order to assist them in finding jobs, suited to their qualifications. Replies from most of the Universities were received where-in they had expressed their inabilities to provide jobs to these scientists.

XII INTERNATIONAL LIAISON

Liaison with International Agencies and Scientific establishments in different countries serve as a means to solve numerous scientific problems by sharing knowledge, exchange of expertise, collaborative research etc. Such agencies were accordingly contacted. Besides, representatives of several foreign organizations paid visits to the Pakistan Science Foundation in order to explore possibilities of collaboration in scientific programmes of mutual interest:

a *Memorandum of Understanding between the Royal Society of London, U.K. and the Pakistan Science Foundation*

i) As per provision of the above memorandum, Pakistan Science Foundation arranged visits of the following five Pakistani scientists to U.K. under the Memorandum of Understanding signed by the Foundation with the Royal Society of London, U.K.

<u>Sr.No.</u>	<u>Name & Address of the Scientist</u>	<u>Amount of grant in Rupees</u>
1.	Dr. S.I. Ali, Department of Botany, University of Karachi	Rs.12,205/-
2.	Dr. J.K. Khattak, Chairman, Deptt. of Soil Sciences, Agricultural University, Peshawar	Rs.13,290/-

- | | | |
|----|---|-------------|
| 3. | Dr. M.A.K. Malghani
Deptt. of Chemistry,
University of Baluchistan,
Quetta. | Rs,14,930/- |
| 4. | Dr. M.R. Sabayo
Mehran University of Engineering
& Technology, Jamshoro. | Rs.12,580/- |
| 5. | Dr.Khalida Usmani
Professor of Surgery,
Fatima Jinnah Medical College,
Lahore. | Rs.12,500/- |

ii) Two British scientists, namely, Prof. Bernard Atkinson and Prof. A.I. Scott, visited Pakistan under the Memorandum of Understanding. Pakistan Science Foundation paid Rs.14,688/- on account of their local hospitality.

b) Visit of Chinese Delegation

A five membered Chinese Delegation of the Chinese Academy of Sciences, visited Pakistan from 7-13th November, 1984. Pakistan Science Foundation paid Rs.61,000/- on account of their local hospitality.

c) Pakistan Science Foundation arranged a lecture by Dr.B.U. Haq of Woods Hole Institute of Oceanography, USA. Rs.1121/- were paid on account of his stay in Islamabad.

d) Memorandum of Understanding between the US National Science Foundation & the Ministry of Science and Technology.

Collaborative Research Programme: Pakistan Science Foundation is acting as a focal point for US-NSF collaborative research projects submitted by scientists from various universities. The Foundation has sponsored the following 4 major research projects from various universities of Pakistan under the Memorandum of Understanding signed between the Ministry of Science & Technology Pakistan and US National Science Foundation.

<u>Project Title</u>	<u>Amount sanctioned</u>	<u>Amount Released</u>	<u>Name of Sponsoring Institute</u>
Study of Bisbenzyl Isoquinoline Alkaloid from Medicinal Plants of Pakistan PSF/Res/NSF (26)	1.033 m	0.174 Ist	University of Karachi Karachi.

Study of Tissue Culture of Plants Alkaloids and Aromatics from Pakistan PSF/Res/NSF (27)	0.859 m	0.174 1st 0.290 2nd	University of Peshawar awar, Peshawar
Study of Age and Tectonic History of Kara Korum Hindu Kush Range land-Inter-mountane Basins of Northern Pakistan PSF/C-Res/NSF (28)	0.237 m	0.174 1st 0.700 2nd	Centre for Excellence in Geology, University of Peshawar Peshawar
Study of Restriction Enzymes PSF/Res/NSF (32)	1.999 m	0.300	Centre for Advanced Studies in Molecular Biology, University of Punjab, Lahore.

The following 3 projects costing Rs.4.526 m duly approved by the Government of Pakistan are under process with the US-NSF for funding:-

- i) Nodulation Status of Legumes of Pakistan
PSF/C-Res/NSF (36)
- ii) Stochastic Modelling in Arid Region
PSF/C-Res/NSF (31)
- iii) Chromosomes number of vascular plants of Pakistan
C-Res/NSF (30)

CHAPTER - 2

PROGRESS OF THE PSF SUPPORTED PROJECTS

An account of the progress reports of the PSF supported projects, received during the year 1984-85, is given below:-

a) Final Reports:

During the year under report eleven (11) final reports were received. Particulars of these schemes and brief summaries of the achievements made therein are as under:-

Project No. P-PU/Agr (64)
Project Title: Eco-Physiological Studies on Some Important weeds of Wheat.

Project Particulars:

- Duration 3 1/2 years
- Date of commencement 16.9.1980
- Date of completion 15.2.1984
- Location Department of Botany, University of Punjab, Lahore.
- Principal Investigator Dr. S. Razi Abbas Shamsi
- Total sanctioned cost Rs.2,63,094/-

Major Objectives: The project envisaged the following studies on three species of weeds, namely *Chenopodium album*, *Asphodelus tenuifolius* and *Enphorlies helioscopia* in various districts of Punjab.

- i) Preliminary survey of the occurrence of these weeds in wheat fields around Lahore.
- ii) Analysis of soil samples at site of their minimum and maximum occurrence.
- iii) Seed germination in relation to the climates and other environmental factors, and
- iv) Weed crop competition.

SUMMARY OF THE WORK DONE:

The following aspects of weeds of wheat were studied:-

1. Reproductive Potentials

Studies on the reproductive potential of seven weed species from irrigated areas and four species from rain-fed areas were undertaken. It was found that weeds with lowest reproductive potential have the heaviest seeds.

2. Frequency and Constancy

19 species from irrigated areas and 14 species from rain-fed areas were studied. Some of these showed a higher degree of frequency of occurrence and constancy, where as other showed gradual decline with the passage of time. Although a good number of weeds are common in irrigated and rain-fed areas; the major weed species with high degree of frequency and constancy are quite different in the two areas.

3. Weed-density

Weed-density per-unit area in the various fields is variable. Weeds show a marked reduction in their density with passage of time. Usually one or two weeds dominate as the wheat crop reaches maturity. Weed proportion in the Barani areas is much higher as compared to irrigated areas.

4. Soil-characteristics

Soil from the irrigated and rain-fed wheat fields was analysed both for physical and chemical characteristics. Soils of rain-fed wheat field are predominantly Sandy with lower moisture content, water holding capacity and organic matter content as compared with the soil of irrigated fields. Differences in the Chemical Characteristics were also marked. Calcium and potassium contents in rain-fed fields were higher than their irrigated counterparts. On the other hand average values of Exchangeable and soluble sodium as well as sodium absorption rates were higher in soil of irrigated fields.

5. Seed Germination

Seeds from irrigated and rain-fed areas were exposed to different temperature regions both in light and dark and it was found that different weeds were favoured by different temperatures as regards their optimum germination.

6. Weed-Wheat Competition

Marked differences in grain reduction caused by equivalent densities of different weeds was found. This can be attributed to their own survival and bio-mass per unit area at different density levels. Experimental evidence of the present studies shows that the grain loss in the wheat field are from 22-40% depending on the actual weed-wheat density at the time of crop maturity.

7. Nutrient Losses

N.P.K. uptake by weeds per unit area increased with increase in their density at the expense of corresponding decline in N.P.K. content of wheat.

Project No.	F-AU/Agr (74)
Project Title:	Standardization of Methods for the Determination of available Copper and to determine the Critical levels of Copper using Maize as a test Crop.
Project Particulars:	
- Duration	3 years
- Date of commencement	1.7.1982
- Date of completion	30.6.1985
- Location	Department of Soil Sciences, NWFP Agricultural University, Peshawar.
- Principal Investigator	Dr. Jehangir Khan Khattak
- Total sanctioned cost	Rs.2,43,740/-

Main Objectives: To study the response of plants to copper in 15 soil series of Peshawar valley using maize as a test crop.

SUMMARY OF THE WORK DONE:

Plants and animals require a number of chemical elements for their growth and life. Some of these elements are required in a comparatively large quantities and known as macronutrients whereas other are required in minute quantities known as micronutrients. Copper is one of these micronutrients and its availability to plants is controlled by various factors such as level of organic matter, root content and nature of the previous crop.

Under this project experiments were carried out to study the response of maize to copper fertilization and to compare the efficiency of different methods of copper extraction. Copper was applied at the rate of 0, 2.5, 7.5, and 10.0 kg/hac in the form of Copper sulphate. Nitrogen and Phosphorus were also applied at the rate of 125 kg and 75 kg/hac respectively as a basal dose. Maize response in terms of fresh and dry matter yields to the application of different levels of copper was non-significant. Extractable copper content of soil of each series was significantly increased with the level of copper applied.

All soil series used in this study had sufficient copper for normal growth of maize plants and it is concluded that there is no need of copper fertilization to these soils at present.

Project No.	F-PU/Bio (72)
Project Title:	Germination Promotion of <i>Pinus roxburghii</i> , <i>P.halepensis</i> and <i>P.walli-chiana</i> seed by stratification and Chemical treatment.
Project Particulars:	
- Duration	2 years
- Date of commencement	1.9.1978
- Date of completion	31.8.1980
- Location of scheme	Department of Botany, University of Peshawar, Peshawar.
- Principal Investigator	Dr. Ihsan Ilahi
- Total sanctioned cost	Rs.68,128/-

Main Objectives

The project aimed at finding methods for reducing the germination period of local pine seeds. The result would help reclaiming pine forests at a rapid speed.

SUMMARY OF THE WORK DONE:

Regeneration of pine forests is negligible in our country due to low germination percentage and lack of knowledge about the growth habit of the important pine species.

Under this project three important pine species, *Pinus roxburghii*, *P. wallichiana* and *P-halepensis* were selected for germination and developmental studies in order to improve the germination percentage and rate thereof.

Pine seeds from trees of different age were grown under different conditions. It was observed that seeds from younger trees exhibited higher germination percentage. Pre-soaking of *P-roxburghii* for 24 hours increased the germination percentage, but prolonged soaking inhibited this phenomenon. In the case of *P-wallichiana* pre-soaking adversely inhibited germination percentage. Due to shortage of seeds such studies could not be conducted on *Pinus-halepensis*.

Effect of temperature showed that optimum temperature for seed germination was about 20°C for *P-roxburghii* and 25°C for the other two. Cold treatment enhanced both the rate and percentage of germination.

Application of chemicals alone had no beneficial effects on germination but when supplemented with stratification both the rate and percentage of germination improved.

Application of various fertilizers to seedlings of pine species had beneficial effects on different developmental phenomenon. However, the response of an individual species was different to the same fertilizer under different growth conditions.

Project No. S-KU/Bio (92)

Project Title: Majid Crabs of the Arabian Sea.

Project Particulars:

- Duration 1 year
- Date of commencement 1.6.1981
- Date of completion 31.5.1982

- Location Department of Zoology, University of Karachi, Karachi.
 - Principal Investigator Dr.Mrs.Nasima M. Tirmizi
 - Total sanctioned cost Rs.28,483/-
- Main Objectives To study and survey the incidence and prevalence of the crabs belonging to the family Majid in Arabian Sea.

SUMMARY OF THE WORK DONE:

Under this project a study was conducted on the Majid crabs of the Arabian Sea, these Crabs form the second largest family of crabs with over 600 species. The work done include the diagnostic features and introduction to the Family Majidae and illustration and description of the local species. A full account of 22 species has been prepared including synonymies, distribution, remarks and individual variation. Out of these 22 species 13 were previously known more or less incomplete. 7 species in the collection are such that they have not heretofore been recorded from the Northern Arabian Sea.

Several specimens were kept under laboratory conditions and their behaviour was carefully noted. All the samples collected from various localities are housed in the Marine Invertebrate Reference Collection Centre and Cards have been made for 350 species for ready reference.

A working key to the sub-families of the Majids of Pakistan has also been prepared.

- Project No. B-BU/Bio (107)
- Project Title: Study of Biology of Vertebrate Pests of Orchards of Baluchistan.

Project Particulars:

- Duration 1 year
- Date of commencement 1.9.1983
- Date of completion 31.8.1984
- Location Department of Zoology, University of Baluchistan, Quetta.
- Principal Investigator Dr. Maqsood Ali

- Total sanctioned cost Rs.1,15,270/-

Main Objectives The project aimed at surveying different areas of Baluchistan for the presence of various vertebrate pests, localizing their distribution and estimating the damages done by them.

SUMMARY OF THE WORK DONE:

Survey was conducted for various vertebrate pests in seven major orchard bearing districts of Baluchistan, i.e. Quetta, Sibi, Pishin, Kalat, Khuzdar, Loralai and Zhob. The data collected indicate that nine different species of small mammals are associated with the orchards, though only four species i.e. *Nesokia indica*, *Rhombomys opimus*, *Ochotona rufescens* and *Hystrix indica* may be acting as significant pests in different areas, whereas *Meriones libycus*, *Tatera indica*, *Mus musculus*, *Meriones persicus* and *Hemiechinus* sp. are also potential of proving as pest at some later stage, if suitable conditions become available. Different areas and different orchard plantation share different degree of damage, which is estimated to a minimum of 31 million of rupees. There are some evidences that the pest infestation is correlated with the extent of the movement of men and material in an area.

The studies of biology of *Nesokia indica*, *Ochotona rufescens*, *Rhombomys*, *Opimus*, *Meriones persicus* and *Mus musculus* is also attempted, though the data collected in this regard is partial and largely inadequate. The needs for further research on all the different aspects of the problem is stressed, if the area is to be saved from the havoc caused through the hands of the vertebrate pests.

Project No. F-PU/Chem (60/1)

Project Title: Molecular weight and size measurement of Colloidal, polymer and macromolecular materials by light scattering techniques.

Project Particulars:

- Duration 1 year
- Date of commencement 1.10.1983
- Date of completion 31.9.1984

- Location National Centre of Excellence in Physical Chemistry, University of Peshawar. Peshawar
- Principal Investigator Dr. Noor Ahmad
- Total sanctioned cost Rs.1,83,416/-

Main Objectives The project aimed at studying the molecular weight and size of colloidal, polymer and macromolecular materials by light scattering techniques and providing a better technical know how to the plastic and polymers in Pakistan. This will help the industry in the control of quality and other important features vital to the betterment of the industry.

SUMMARY OF THE WORK DONE:

The characterization of a polymer is dependent upon the size, molecular weight and shape of the polymer. Therefore, it is essential to know these parameters before they are used.

During the course of this project, the molecular weight and size of polymer was investigated by light scattering techniques employing the following three methods.

- i) Turbidity Method
- ii) Dissymetry Method
- iii) Zimm Plot Method

The work was divided into two parts. During part-I a polymer sample obtained from Ravi Reyan, was characterized. Several different concentrations at two wave-lengths of 436 and 546 nm were investigated. A small work was also done at 632 nm.

The range of the results obtained are as under:-

- i) Apparant molecular weight 1,00,000-7.75,194 g/mole
- ii) Second varial coefficient $(708 \times 10^{-6} - 2.06 \times 10^{-2})$
- iii) Excluded volume $(1.5 \times 10^{-19} - 2.26 \times 10^{-2})$
- iv) Specific volume 936 - 1.012 ml/g
- v) Radii of gyration 1095 - 1398A°

During part-II the size of cellulose acetate particles for different fractions was measured by the dissymetry method. The fractions of cellulose acetate, obtained by fractional pre-

precipitation, were dissolved in acetone and solutions of different concentrations were prepared. The dissymmetry of these fractions was measured at 45° and 135° angles at wavelengths of 436 nm and 546 nm of incident light. The value of intrinsic dissymmetry Z_0 were obtained for all the fractions. From these values the diameters were calculated and compared with standard data of rod like and coil like shapes.

Project No. S-KU/Chem (84/2)
Project Title: Isolation and Structural Studies on the Chemical Constituents of Some Indigenous Flowering Plants.

Project Particulars

- Duration 1 year
- Date of commencement 1.9.1983
- Date of completion 31.8.1984
- Location of scheme HEJ Institute of Chemistry, University of Karachi, Karachi.
- Principal Investigator Dr. Viqarud Din Ahmad
- Total sanctioned cost Rs.80,313/-

Main Objectives To isolate the chemical constituents of some flowering plants growing wild in Pakistan and determine their structural composition.

SUMMARY OF THE WORK DONE:

During this project work was done on the isolation and characterisation of the chemical constituents of the following plants:-

1. *Prosopis juliflora*
2. *Nepeta hindostana*
3. *Euphorbia granulata*

As a result of the studies conducted on the plant *Prosopis juliflora* several new alkaloids were isolated and characterized. The microbial study showed that these alkaloids inhibit the growth of pathogenic fungi and gram positive bacteria.

Studies on the plant *Nepeta hindostana* resulted in the isolation of a number of Triterpenes.

The work on the plant *Euphorbia granulata* resulted in the isolation of gallic acid and triterpenes. With the help of spectroscopic studies lupeol, lupeol acetate, taxasterol acetate, B-sitosterol were identified.

Project No. C-QU/Chem (138)
Project Title: Estimation of Trace Metal Contaminants and Pollution Control Parameters, for Local Public Utility Waters.

Project Particulars:

- Duration 1 year
- Date of commencement 13.8.1983
- Date of completion 12.8.1984
- Location of scheme Department of Basic Sciences, Quaid-i-Azam University, Islamabad.
- Principal Investigator Dr. M. Jaffar
- Total sanctioned cost Rs.93,840/-

Main Objectives To determine the quality of water, both treated and untreated, occurring in and around the Federal Capital area.

SUMMARY OF THE WORK DONE:

Under this project water samples from 125 different public utility supply sources within a radius of 5 miles from Islamabad were collected and its various physiochemical parameters and trace metal contaminants were estimated with the help of standard analytical methods and atomic absorption spectrophotometric technique. The measured physiochemical parameters include temperature, pH, conductance, alkalinity, hardness, chemical oxygen demand, ozone, phosphate, nitrate, nitrite and total dissolved oxygen. The trace elements estimated are sodium, potassium, copper, iron, zinc, strontium, nickel, cobalt, lead, cadmium, chromium, barium, antimony and mercury. The data thus obtained is discussed in terms of feasibility of the tested waters for public utility within the frame work of the internationally known tolerable levels.

Project No. S-KU/Chem (142)

Project Title: Chemical Spectroscopic and Microbial Studies of Transition Metal Complexes Containing Mixed Ligands.

Project Particulars:

- Duration 1 year
- Date of commencement 1.9.1983
- Date of completion 30.8.1984
- Location of scheme Department of Pharmaceutical Chemistry, University of Karachi.

- Total sanctioned cost Rs.25,000/-

- Principal Investigator Dr. Najma Sultana

Main Objectives

- Synthesis of Transition Metal complexes containing mixed ligands.
- Spectroscopic evidence of their formation.
- Microbial Studies.

SUMMARY OF THE WORK DONE

During the project work was carried out on the synthesis and Chemical, Spectroscopic and Antibacterial studies of mixed ligand complexes of transition metals. The ligands used were monodentates having donor characteristic, such as quinoline, 2,5, dichloraniline, 2,5 dimethyl aniline, 2-ethylpyridine, X-napht-hylamine and dimethylamine. These ligands differ in their chemical properties and in the position of the nitrogen atoms.

As a result of the synthesis, new mixed ligand complexes with triphenyl-phosphine were synthesised.

The Chemical studies showed that tetrakis halogeno triphenylphosphine copper (I) $\text{CuX}(\text{PPH}_3)_4$ and di- μ -halogeno bis triphenylphosphine di copper (I) $\text{Cu}_2\text{X}_2(\text{PPH}_3)_4$ gives compounds of different stoichiometry when treated with quinoline in different molecular ratios.

Ultra violet spectra of complex compounds were examined in the region $400-200 \text{ m}^{-1}$ to ascertain whether the spectra are compatible with these reported for the ligands. Spectroscopic and conductometric measurements were carried out for the structural studies of the newly synthesised compounds.

In the microbial studies, *Bacillus subtilis* and *Escherichia coli* were used as the microbial organisms. The complexes were found inactive to the organisms.

Project No. S-KU/Med (45)
Title: Hemoglobin Structure Changes and their impact on function.

Project Particulars:

- Duration 1 year
- Date of commencement 28.5.1983
- Date of completion 31.5.1984
- Location of scheme HEJ Research Institute of Chemistry, University of Karachi, Karachi.
- Principal Investigator Dr.Zafar H. Zaidi
- Total sanctioned cost Rs.59,966/-

Main Objectives This study aimed at studying the abnormal hemoglobin from antenatal pregnant women to determine the distribution of abnormal hemoglobin and their relation to anemic condition during pregnancy.

SUMMARY OF THE WORK DONE:

Studies of abnormal hemoglobin have greatly improved our knowledge about molecular biochemistry of hemoglobin and health care of patients carrying mutants. For example sickle cell anemia has been identified as a genetic disease resulting from a single residue mutation of glutamine for valine in B-Chain at 6th position.

Under this project a study to determine the prevalence of abnormal hemoglobin and anemia among the pregnant women was undertaken. For this purpose 1050 antenatal blood, 300 umbilical cord blood and 100 venous blood samples were tested for abnormalities. The results revealed that anemic condition in Pakistan is very high as compared to developed countries. Whole blood hemoglobin concentration determined according to Drabkins, resulted that 70% of the subjects were severely anemic. Electrophoretically it was found that 20 out of 1050 samples were abnormal of which 7 seemed to be new variant of hemoglobin.

Project No. P-PMI/Med (81)
Project Title: Comparative Study of lung-function tests in healthy adults and chronic smokers applying different smoking techniques.

Project Particulars

- Duration 1 year
- Date of commencement 1.6.1983
- Date of completion 31.5.1984 .
- Location of scheme Post-graduate Medical Institute Lahore.
- Principal Investigator Prof. Shahnaz Javed Khan
- Total sanctioned cost Rs.74,660/-

Main Objectives

- i) To compare lung function tests in presumably healthy male Pakistani adults.
- ii) To access the effect of lung-function in adult males.
- iii) To evaluate and confirm the reported controversial effects of different techniques of smoking.

SUMMARY OF THE WORK DONE:

The three components of lung-function i.e. ventilation, perfusion and diffusion are in a balance during normal health. Any imbalance therein results in a reduction in effective transfer of gases and is an indication of ill health. Spirometric tests of ventilatory capacity can provide comparison of established physiological data obtained from healthy subjects with that from patients suffering from respiratory insufficiency.

During this project, studies on the lung-functions of chronic smokers, applying different smoking techniques, were conducted with the help of vitalograph-S-Model spirometer.

For this purpose 290 subjects of 25-65 years of age were analysed for lung function tests before and after exercise during the study. Fifty subjects were non-smokers and labelled as controlled group. Rest of the subjects were smokers and

were divided into cigarette and huqqa smokers. Each group of smokers was further subdivided into mild, moderate and heavy smokers. Ten variables were measured from the forced vital capacity curve. These variable are as under :-

- i) Vital capacity (V.C.)
- ii) Forced vital capacity (F.V.C.)
- iii) Forced Expiratory Volume (F.E.V)
- iv) Forced Expiratory Ratio (F.E.R.)
- v) Maximum Midexpiratory flow Rate (M.M.F.R.)
- vi) Maximum Midexpiratory Flow Time (M.M.F.T)
- vii) Forced Expiratory Flow (F.E.F.)
- viii) Forced Expiratory Flow Ratio (F.E.F.R)
- ix) Expiratory Time (E.T. 0.8)
- x) Expiratory Time (E.T. 0.5)

The effects of huqqa, and cigarette smoking with the same intensities, carrying from mild to heavy, were measured with respect to the above variables. The effects were compared among themselves and with those of the non-smokers. All the results have been shown in table and group form.

b) Second Annual Reports

The second annual reports of the following projects were received and processed by the Foundation during the period under report:

<u>S.No.</u>	<u>Project No.</u>	<u>Project Title</u>
1.	F-AU/Agr (74)	Standarization of various methods for the determination of available micronutrients and to determine the critical levels of various micronutrients using wheat, maiz as test crop.
2.	P-PU/Bio (102)	Studies on vertebrate fossils of Pakistan.
3.	S-KU/Bio (109)	A qualitative survey of nodulating ability of legumes of Pakistan.
4.	B-BU/Bio (111)	Soil vegetation and termities. Their interrelationship in Baluchistan
5.	S-JPMC/Med (44)	Investigations on the therapeutic value of indigenous plants used in traditional medicine for the control of diabetes.

c) First Annual Reports

The first annual reports of the following projects were received and processed further by the Foundation:-

<u>Sr.No.</u>	<u>Project No.</u>	<u>Project Title</u>
1.	P-CSIR/Agr (67)	Utilization of indigenous resources for introduction of game birds breeding in Pakistan.
2.	S-PCCC/Agr (77)	Development of Commercial Cotton Hybrid.
3.	B-BU/Bio (111)	Soil vegetation and Termities. Their interrelationship in Baluchistan.
4.	S-SU/Bio (115)	Studies on Taxonomy, Ecology and economic importance of Acrididae (arthoptera) of Sind.
5.	S-KU/Bio (116)	Chemotaxonomic Studies in Angiosperms (from Pakistan) with reference to Phenolics.
6.	P-PU/Bio (117)	Biology of <i>Bellamy bangalensis</i> Lamarch with special reference to its reaction to other Molluses & digenetic, trematode parasites.
7.	C-QU/Chem (137)	Polymerization & electron transfer process, studies on substituted Ethylenes.
8.	S-KU/Chem (96/1)	Synthetic & Isolation studies towards Vinblastine and Vincristine and their Novel Derivatives.
9.	S-CSIR/Chem (143)	Development of new Inorganic Materials (Inorganic Plastics of the future) based on portland cement.
10.	P-PU/Eng (3/1)	Studies of Atmospheric, underground and Industrial Corrosion Processes.
11.	C-QU/Med (88)	Use of Carcino Embroynic Antigen for Cancer Diagnosis.
12.	B-BU/Med (93)	Biochemistry of Normal Esthomatic and Bronchitic Lung Mucus.

13. P-PJ/Phy (40) Fabrication & Characterization of MIS and thin Film Solar Cells.
14. P-PU/Phy (11/2) High Energy Phenomenology.

CHAPTER - 3

ORGANIZATION AND ADMINISTRATION

The organizational structure of the Pakistan Science Foundation, Pakistan Scientific & Technological Information Centre & Pakistan Museum of Natural History are given on page 51,52,53.

The staff position in the Foundation, PASTIC & PMNH during the report period is as under :-

PAKISTAN SCIENCE FOUNDATION

Sr.No.	Designation	Number
1.	Chairman	1
2.	Member Science	1 (Vacant)
3.	Director/Member Finance	1
4.	Secretary	1
5.	Principal Scientific Officers	3
6.	Senior Scientific Officer	1
7.	Deputy Secretary	1
8.	Deputy Director (F&A)	1
9.	Accounts Officer	1
10.	Scientific Officers	4
11.	PS to Chairman	1
12.	Science Promotion Officer	1
13.	Librarian	1
14.	Assistant Scientific Officer	1
15.	Audit Officer	1
16.	Accountant	1
17.	Administrative Officer	1
18.	Supporting Staff	54
	Total:	<u>76</u>

In addition to the whole-time staff members of the Foundation there are about 200 scientists and technologists in various universities/research organizations who are acting in an honorary capacity as reviewers of the research proposals and members of the Technical Committees or Principal Investigators of Pakistan Science Foundation supported projects.

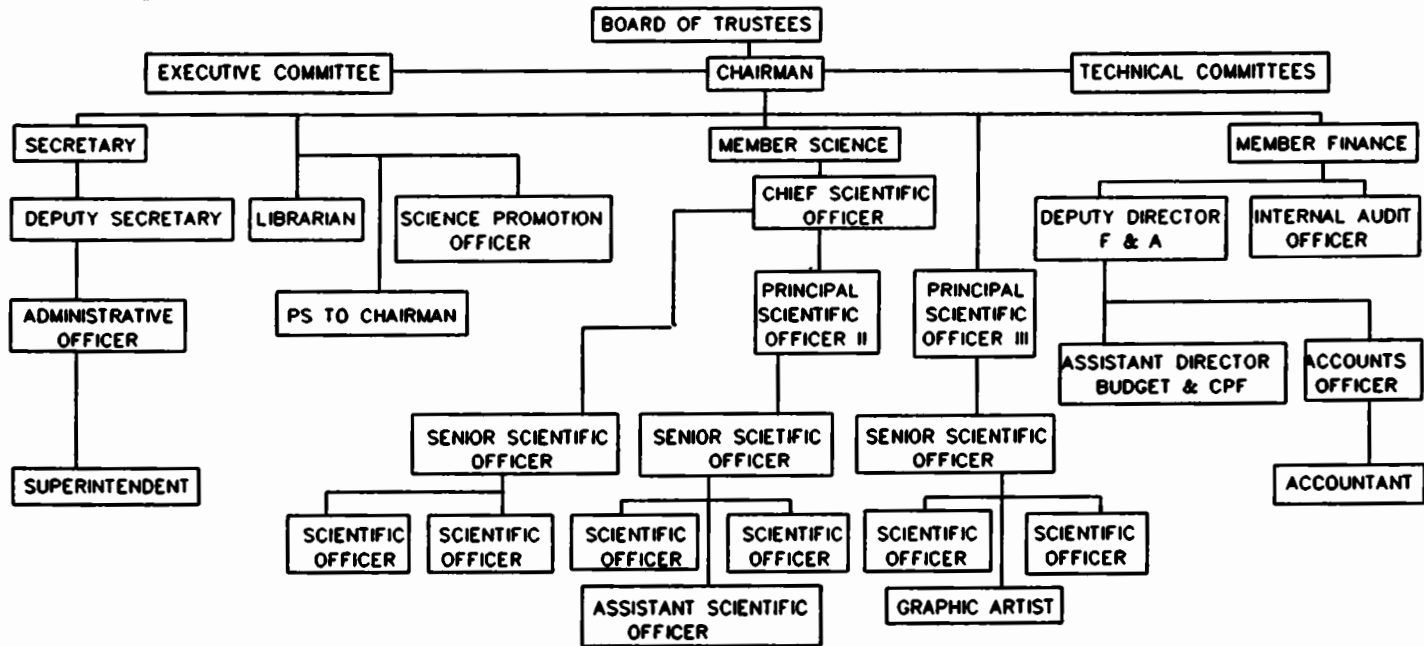
**PAKISTAN SCIENTIFIC & TECHNOLOGICAL INFORMATION
CENTRE (PASTIC) ISLAMABAD**

Sr.No.	Designation	Number
1.	Director	1
2.	Principal Documentation Officer	1
3.	Chief Editor	1
4.	Senior Librarian	1
5.	Manager Reprographic Unit	1
6.	Senior Information Officer	1
7.	Chief Liaison Officer	1
8.	Senior Translating Officer	1
9.	Senior Bibliographic Officer	1
10.	Senior Administrative Officer	1
11.	Liaison Officer (Quetta)	1
12.	Liaison Officer (Peshawar)	1
13.	Photographic Officer	2
14.	Printing Officer	1
15.	Accounts Officer	1
16.	Superintendent Documentation	1
17.	Supporting Staff	<u>71</u>
		<u>89</u>

**PAKISTAN MUSEUM OF NATURAL HISTORY
P M N H**

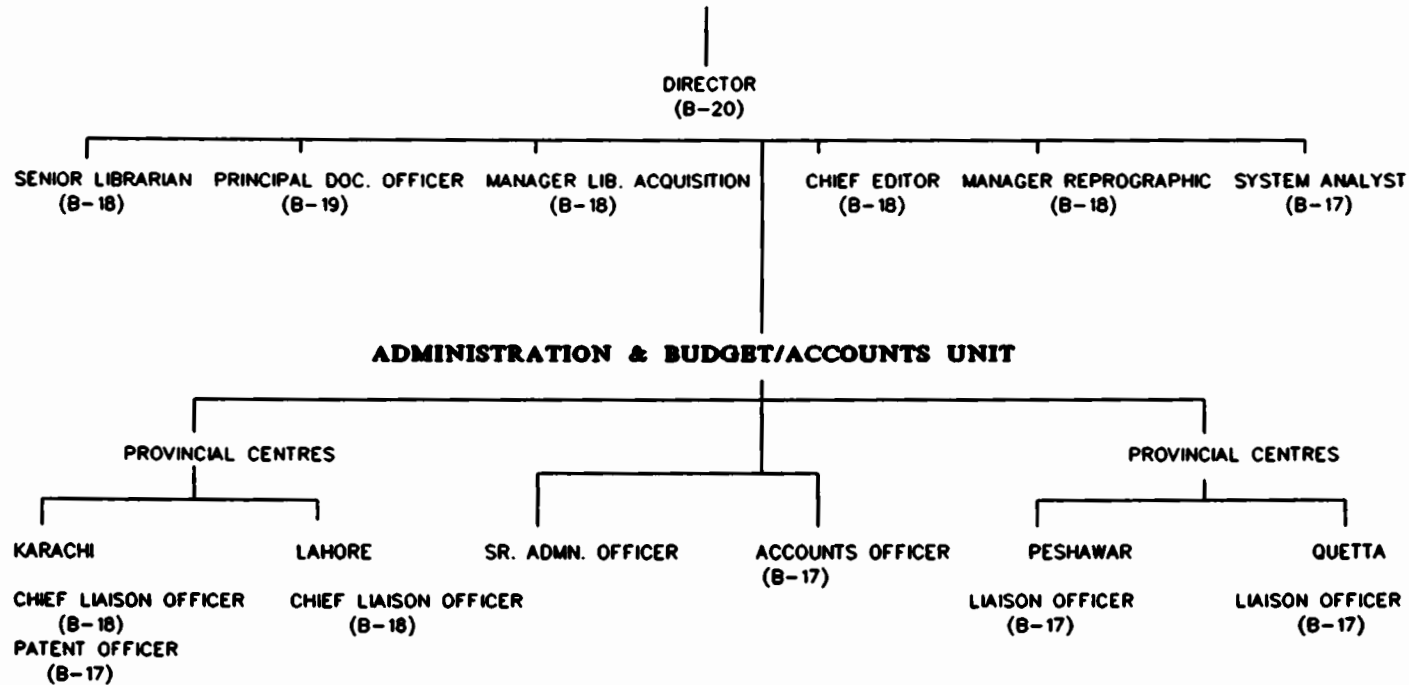
<u>Sr.No.</u>	<u>Designation</u>	<u>Number</u>
1.	Director General	1
2.	Directors	2
3.	Curators	2
4.	Associate Curators	5
5.	Research Associates	18
6.	Taxidermist	1
7.	Product Designer	1
8.	Artist	1
9.	Modeller	1
10.	Children Education Programmer	1
11.	Administrative Officer	1
12.	Accounts Officer	1
13.	Accountant	1
14.	Supporting Staff	<u>64</u>
	Total:	<u>100</u>

**PAKISTAN SCIENCE FOUNDATION
ORGANIZATIONAL CHART**



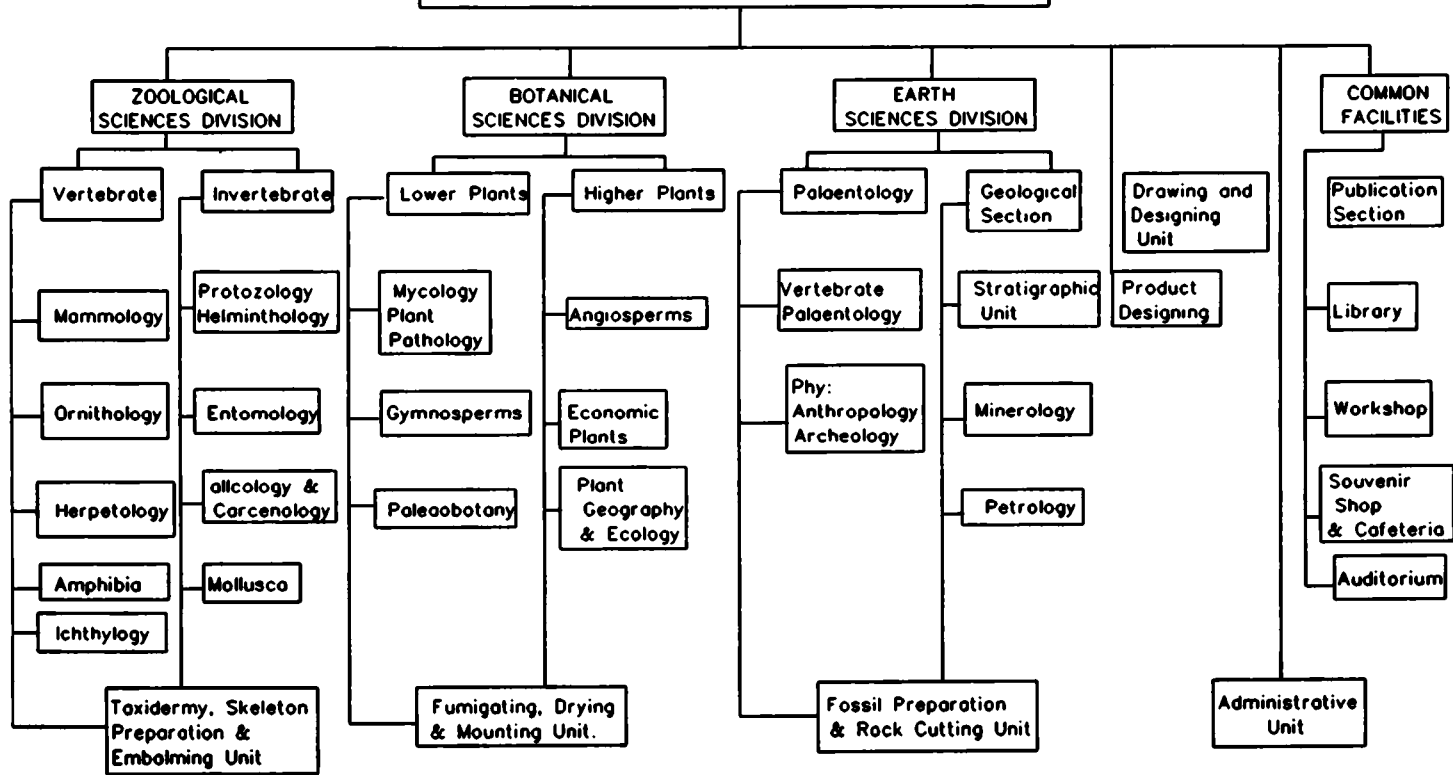
ORGANIZATION CHART

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



ORGANIZATIONAL STRUCTURE

PAKISTAN MUSEUM OF NATURAL HISTORY



CHAPTER - 4

AUDITORS REPORT

The reports of the Auditors appointed by the Foundation in consultations with the Auditor General of Pakistan are re-produced with respect to Pakistan Science Foundation, and its attached departments, Pakistan Scientific & Technological Information Centre and Pakistan Museum of Natural History.

The names and addresses of the Auditors are :-

Pakistan Science Foundation	Nazir Chaudhri & Co. Chartered Accountants, 2-Gardee Trust Building Napier Road, <u>Lahore-7</u>
Pakistan Scientific & Technological Information Centre	Akbar & Company Chartered Accountants Amin Building Shahrah-e-Quaid-i-Azam <u>Lahore</u>
Pakistan Museum of Natural History	Ilyas Saleem & Co., Chartered Accountants, 18-D, 6th Road, Satellite Town, <u>Rawalpindi</u>

65793
Phone: 68304
56560

NAZIR CHAUDHRI & CO
CHARTERED ACCOUNTANTS
2-GARDEE TRUST BUILDING, NAPIER ROAD,
L A H O R E - 7

AUDITOR'S REPORT

We have examined the annexed Balance Sheet of PAKISTAN SCIENCE FOUNDATION as at 30th June, 1985 and the annexed income and Expenditure Account for the year ended 30th June, 1985, and report that :-

- a) We have obtained all the information and explanation we required;
- b) Such Balance Sheet exhibits a true and correct 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 the Foundation;
- c) The receipts of the Foundation during the year ended 30th June, 1985, comprise of grants received from the Federal Government. We are satisfied that the grant so received has been utilized on the objects for which it was made within the specified time limit and that there was no unspent balance except for expenses incurred but not paid upto June, 30, 1985. However refunds amounting to Rs.92,957/- received during the year as also the accumulated balance thereof (Note '6' of the account), were not surrendered to the Federal Government upto the Balance Sheet date. We have also satisfied ourselves about the propriety of the disbursements made from the grant.

Sd/-

NAZIR CHAUDHRI & CO.
CHARTERED ACCOUNTANTS

· NAZIR CHAUDHRI & CO.
CHARTERED ACCOUNTANTS
2- GARDEE TRUST BUILDING, NAPIER ROAD
L A H O R E - 7

PAKISTAN SCIENCE FOUNDATION

NOTES ON ACCOUNTS JUNE 30, 1985

ACCOUNTING POLICIES

1. The principal accounting policies which have been adopted in the preparation of the Foundation's account are as follows:-

GRANT RECEIVED

- 1.1 Grant from the Govt. of Pakistan have been accounted for on receipt basis.

RESEARCH SUPPORT GRANT

- 1.2 Research support grant have been accounted for on payment basis.

FIXED ASSETS

- 1.3 Fixed Assets have been valued at cost less accumulated depreciation except lease hold land which is valued at cost.
- 1.4 Depreciation of Fixed assets have been charged on reducing balance method.

GENERAL FUND

2.	This is made up of	1984	1985
	Balance as at 1st July 1984	48,86,625/-	45,26,815/-
	Add Grant sanctioned and received from Govt. of Pakistan.		
	as under:		
	Non Development grant received from Govt. of Pakistan.	1,20,00,000/-	75,30,000/-
	Development grant received from the Govt. of Pakistan	16,75,000/-	5,22,000/-
		1,85,61,625/-	1,25,78,815/-

Less expenditure during the year	1,29,56,149/-	76,54,815/-
	56,05,476/-	49,24,000/-

Less refund of unutilized grant disbursed during the year shown under grant re- fundable to the Govt. (Note.6).	30,936/-	37,375/-
	55,74,540/-	48,86,625/-

3. RESEARCH SUPPORT GRANT

- a) In accordance with the principle outlined in the charter grant aggregating Rs.5,908,975 have been paid by the Foundation during the year for the conducting of various approved scientific research projects as detailed here.

Physical Sciences	690,719
Chemical Sciences	684,172
Biological Sciences	956,933
Earth Sciences	250,265
Environmental Sciences	170,715
Agricultural Sciences	525,730
Engineering Sciences	313,354
Medical Sciences	1,474,027
Institutional Support	285,000
Marine Sciences	547,110
Honorarium	10,950
	5,908,975

- b) This balance is arrived at as follows:-

Balance as on 1st July, 1984	3,57,83,751
Disbursed during the year	59,08,975
Balance as on 30.6.85.	4,16,92,726

4. In accordance with the Provision of the agreement the guarantee has under taken to incur the grant for the performance and execution of the research project for which the grant has been sanctioned accordingly, these grants are being carried forward in the accounts of the Foundation, and have not been adjusted for completed projects.

5. CURRENT LIABILITIES

These are made up of:

	Liabilities for expenses	80,500	65,500
	Audit fee & expenses	6,033	4,599
	Salaries and other benefits		
	Other administrative expenses	<u>20,517</u>	<u>41,808</u>
		<u>107,050</u>	<u>111,907</u>
6.	<u>GRANTS REFUNDABLE TO GOVERNMENT</u>		
	Balance brought forward	11,78,082	886,196
	Amounts refunded during the year relating to grants disbursed:-		
	During the year	30,936	37,375
	In prior year	<u>394,205</u>	<u>254,511</u>
		<u>425,141</u>	<u>291,886</u>
	Less grant refunded to Govt.	1,603,223	1,178,082
		<u>1,510,266</u>	<u>-</u>
		<u>92,957</u>	<u>1,178,082</u>
		=====	=====
7.	<u>RESEARCH PROJECTS IN PROGRESS</u>		
	This represents the expenditure incurred on various research projects which appear per contra on the liabilities side under the head "Research Support Grants"		
8.	<u>ACCOUNT RECEIVABLE</u>		
	These consist of		
	UNESCO COUPONS		50,000
	PASTIC	162,000	162,000
	PMNH		<u>5,000</u>
		<u>162,000</u>	<u>217,000</u>
		=====	=====
9.	<u>ADVANCES DEPOSITS & PREPAYMENTS</u>		
	These are made up of:		
	Advance to staff	149,373	76,795
	Deposits	5,500	5,500
	Prepayments	828,840	491,436
	L/C Margin	<u>200,230</u>	<u>165,000</u>
		<u>1,183,952</u>	<u>738,731</u>

10.	<u>CASH & BANK BALANCE</u>		
	In hand	15,760	14,192
	with bank (A/c No.052)	-	1,099,055
	Unesco Coupons	208,000	158,000
		<u>223,760</u>	<u>1,271,247</u>
		=====	=====
11.	<u>GRANTS</u>		
	Research support.	5,908,975	2,32,673
	Scientific Societies & Prof. Bodies.	1,040,000	693,000
	Science conferences, Meetings & Seminars	<u>355,787</u> 7,304,762	<u>548,278</u> 3,473,951
		=====	=====
12.	<u>DEVELOPMENT GRANT</u>		
	This represents the grant received through Govt. of Pakistan from AID. of United States National Science Foundation of America for Project PL-480 and have been paid to the following		
	University of Peshawar	9,10,000	3,48,000
	Punjab University Lahore	3,00,000	-
	University of Karachi	<u>4,65,000</u>	<u>1,74,000</u>
		16,75,000	5,22,000
		=====	=====
13.	<u>TRAVEL, GRANT FOR SCIENTIFIC SURVEY, SCIENCE CONFERENCE & SEMINAR</u>		
	Local	4,671	92,085
	Foreign	<u>3,79,801</u>	<u>2,92,872</u>
		3,84,472	3,84,957
		=====	=====
14.	<u>SCIENTISTS POOL</u>		
	Salary	5,516	1,500
	Honoraria & Travelling	<u>270</u>	<u>900</u>
		5,786	2,400
		=====	=====
15.	<u>OTHERS</u>		
	Science Centres & Herbaria	1,09,718	2,92,000
	Information & Documentation	18,560	20,480
	Awards, Prizes & Fellowships	21,085	40,360
		<u>1,49,363</u>	<u>3,52,840</u>
		=====	=====

16. ADMINISTRATIVE EXPENSES

These comprise of

Salaries & other Benefits	20,82,844	18,33,369
Travelling expenses- Local	86,641	69,311
Office Rent	4,20,433	3,03,600
Electricity, Gas & Water	40,066	42,065
Postage, telegrams & telephones	2,26,282	1,52,716
Printing & Stationary	42,193	79,557
Vehicle Running & Maint.	2,07,278	1,66,438
Newspapers & Periodicals	13,563	11,424
Liveries & Uniforms	4,008	2,580
Entertainment	50,386	40,408
Repair & Maintenance	21,298	24,564
Miscellaneous expenses	18,858	22,791
Audit charges (C.P.Fund)	2,100	-
Depreciation	<u>1,76,832</u>	<u>1,48,733</u>
	<u>33,92,782</u>	<u>28,97,556</u>
	=====	=====

OTHER EXPENDITURE S

Audit Fee	15,000	13,000
Advertisement	16,791	-
Bank charges	4,079	1,387
Import Licence Fee	-	3,300
Oil Painting charges	-	8,000
Subscription	572	-
Expert & consultants	<u>14,074</u>	<u>-</u>
	<u>50,516</u>	<u>25,687</u>
	<u>34,43,298</u>	<u>29,23,243</u>
	=====	=====

17. MISCELLANEOUS INCOME

This is made up as under

Interest on advance	-	2,013
Profit on Sale of Motor Cycle	-	2,563
Profit on sale of vehicle	3,532	-
Sale of Useless Stores	<u>3,000</u>	<u>-</u>
	<u>6,532</u>	<u>4,576</u>
	=====	=====

18. FIGURES

a. In these accounts have been rounded off to the nearest Rupee.

b. Of the previous year have been re-arranged wherever necessary for the purpose of comparison.

PAKISTAN SCIENCE FOUNDATION
BALANCE SHEET AS AT 30TH JUNE, 1985

<u>FUNDS AND LIABILITIES</u>	<u>NOTE</u>	<u>1985</u>	<u>1984</u>	<u>PROPERTY & ASSETS</u>	<u>NOTE</u>	<u>1985</u>	<u>1984</u>
GENERAL FUND	2	55,74,540	48,86,625	<u>FIXED ASSETS</u>			
				(As per schedule annexed		42,04,835	39,49,636
<u>RESEARCH SUPPORT GRANTS</u>	3	4,16,92,726	3,57,83,751	<u>RESEARCH PROJECTS</u>			
				<u>IN PROGRESS</u>	7	4,16,92,726	3,57,83,751
<u>CURRENT LIABILITIES</u>							
For expenses	5	1,07,050	1,11,907	<u>CURRENT ASSETS</u>			
				Account Receivable	8	1,62,000	2,17,000
Grant Refundable to Govt.	6	92,957	11,78,082	Advances, Deposits, and			
		2,00,007	12,89,989	Payments.	9	11,83,952	7,38,731
				Cash & Bank Balances	10	2,23,760	12,71,247
						15,69,712	22,26,978
Rupees		<u>4,74,67,273</u>	<u>4,19,60,365</u>			<u>4,74,67,273</u>	<u>4,19,60,365</u>

The above balance sheet should be read in conjunction with the annexed notes on account.

CHAIRMAN

TRUSTEE

TRUSTEE

LAHORE:
DATE: 28 MAR 1988

Sd/- NAZIR CHAUDHRI & CO
CHARTERED ACCOUNTANTS

PAKISTAN SCIENCE FOUNDATION ISLAMABAD
INCOME AND EXPENDITURE FOR THE YEAR ENDED 30TH JUNE, 1985

NAZIR CHAUDHRI & CO
CHARTERED ACCOUNTANTS

<u>EXPENDITURE</u>	<u>NOTE</u>	<u>1985</u>	<u>1984</u>
Grants	11	73,04,762	34,73,951
Development Grant	12	16,75,000	5,22,000
Travel Grant for Scientific Survey -	13	3,84,472	3,84,957
Science Conference and Seminars			
Scientists Pool	14	5,786	2,400
Other Functions	15	1,49,363	3,52,840
Administrative expenses	16	<u>34,43,298</u>	<u>29,23,243</u>
		<u>1,29,62,681</u>	<u>76,59,391</u>
INCOME:	17		
Miscellaneous	17	<u>6,532</u>	<u>4,576</u>
Net Expenditure for the year transferred to General Fund.		1,29,56,149	76,54,815

Note: The above Income and Expenditure account should be read in conjunction with the annexed notes on account.

CHAIRMAN

TRUSTEE

TRUSTEE

LAHORE:
DATE: 28 MAR 1988

Sd/- NAZIR CHAUDHRI & CO
CHARTERED ACCOUNTANTS

NAZIR CHAUDHRI & CO
CHARTERED ACCOUNTANTS

PAKISTAN SCIENCE FOUNDATION, ISLAMABAD
SCHEDULE OF FIXED ASSETS AS AT 30TH JUNE, 1985

PARTICULARS	As at 1.7.84	Additions during the year	C O S T		As on 30.6.85	Rate	As on 1.7.84	D E P R E C I A T I O N		Written Down Values as at 30.6.1985	
			Adjust- ment & Sale					Adjust- ment	For the year		As on 30.6.85
Land Lease Hold	30,13,919	-	-		30,13,919.00	-				30,13,919.00	
Furniture & Fixture	4,00,939	79,718.79	-		4,80,657.79	6%	109,538	-	22,267.19	131,805.19	3,48,852.60
Office Equipment	4,73,692	115,700.00	-		5,89,392.00	15%	195,339	-	59,107.95	254,446.95	3,34,945.05
Air conditioner	1,18,364	-	-		1,18,364.00	15%	73,806	-	6,683.70	80,489.70	37,874.30
Motor Vehicles	6,08,828	-	(52783)		5,56,045.00	20%	324,134	(47115)	55,805.20	332,824.20	2,23,220.80
Bicycle	680	-	-		680	20%	457	-	44.60	501.60	178.40
Library Books & Films	43,517	52,429.85	-		95,946.85	5%	7,029	-	4,445.89	11,474.89	84,471.96
Science equipment	-	189,850.13	-		1,89,850.13	15%	-	-	28,477.52	28,477.52	1,61,372.61
Rupees:	46,59,939	437,698.77	(52783)		50,44,854.77		710,303	(47115)	176,832.05	840,020.05	42,04,834.72
1984	45,00,032	166,143.00	(6236)		46,59,939.00		566,969	(5399)	148,733.00	710,368.00	39,49,636.00

Sd/- NAZIR CHAUDHRI & CO.

**AKBAR & COMPANY
CHARTERED ACCOUNTANTS**

MUHAMMAD AKBAR
C.Com.(Hons.) F.C.A.

The Chairman,
Pakistan Science Foundation,
P-13, Al-Markaz,
F-7/2,
Islamabad.

Subject:- AUDIT OF BOOKS OF ACCOUNTS OF PAKISTAN
SCIENTIFIC AND TECHNOLOGICAL INFORMATION
CENTRE FOR THE YEAR ENDED JUNE 30, 1985

Sir,

We have completed the audit of Receipts and Payments Account of Pakistan Scientific and Technological Information Centre, Islamabad, Lahore, Karachi, Quetta and Peshawar for the year ended June 30, 1985, and our comments are as under:-

(i) ISLAMABAD CENTRE:

1. Grants:

These represents the amounts received by the centre from Accountant General Revenue of Pakistan during the year under audit. The amount allocated and remitted to Sub-Centres is as under:-

<u>Name of Centre</u>	<u>Funds Allocated</u>	<u>Funds Utilized Remitted.</u>
Islamabad	2,641,000	2,547,336
Karachi	466,000	483,388
Lahore	208,000	207,964
Quetta	186,000	219,956
Peshawar	168,000	210,356
	<u>3,669,000</u>	<u>3,669,000</u>

From the above, it is clear that Sub-Centres have incurred Rs.93,664 excess than the approved budget which were recouped from Pastic Centre, Islamabad. Expenses exceeding the budget of the Sub-Centres are to be approved by "Finance and Accounts Wing P.S.F." which was not made available for our verifications.

PASTIC- Islamabad has remitted Rs.10,000 to Sub-Centre Quetta on June 29, 1985 which was received on July 2, 1985.

2. Repair and Maintenance - Building:

Rs.10,000 were paid to Mr. Nazir Ahmad Chohan vide Voucher No.9 and 10 dated October 9, 1984 as Repair and Maintenance Building but no supporting evidence regarding expenses were attached with vouchers.

3. Treasury Account:

Rs.29,307 was deposited in treasury in November 1984 was explained to be deposited on behalf of Karachi Centre but no documentary evidence in this regard was available for our verification.

4. Stationery:

Stationery purchased for R.398 on July 26, 1984 was not entered in Stock Register.

5. Furniture and Fixture:

Advances of Rs.4,130 paid to Mr. Nazir Ahmad Chohan for purchase of fan on June 25, 1985 has been debited to furniture and fixture account but no cash memo/bill was available.

6. Repair of Car:

Rs.200 paid to Driver Alam Shah on June 26, 1985. Supporting evidence of Rs.150 was attached and for the balance neither supporting evidence was available nor the same was refunded.

7. Uniform and Liveries:

Rs.1120 were paid on June 5, 1985 for purchase of mats but no cash memo/bill was available.

8. Equipment:

Rs.3000 paid to Mr. Mohammad Mobin on May 8, 1985 vide V. No.22-B for the purchase of Computer's assessories which remains unverified in absence of cash memo/bill.

9. C.P.Fund Deduction:

9. C.P.Fund Deduction:

During the course of audit we observed short deductions of C.P.Fund from the following employees and this practice remained continued from July 1984 to November 1984 and even after no rectification was made:-

<u>S.No.</u>	<u>Name of employee</u>	<u>C.P.Fund</u> <u>deducted</u>	<u>C.P.Fund</u>
<u>Gazetted Staff:</u>			
1.	Mr. Ghulam Hamid	450	480
2.	Mrs. Sultana Akhtar	300	318
3.	Mr. Riaz H. Akbar	356	396
4.	Mr. Nazir Ahmad Chohan	263	281
5.	Mr. M.A. Madani	231	241
6.	Mr. Saeed Mohd. Khan	175	191
7.	Mr. S. Asadullah	251	261

Deduction of C.P.Fund of Mr. Riaz H. Akbar are not correct even after November 1984.

Non-Gazetted:

1.	Mr.S.K. Siddiquddin	219	225
2.	Mr.Mohammad Ramzan	92	96
3.	Mr.Saeed Khan	154	157
4.	Mr.Syed Vikalt Ali	153	157
5.	Mr.Zia-ud-Din Farooqi	99	101
6.	Mr.Syed Irfan A. Shah	81	84
7.	Mr.Mohammad Zafar Khan	101	104
8.	Mr.Irshad Ahmad	65	67
9.	Mr.Nazir Ahmad	65	67
10.	Mr.Abdul Hakeem	65	67
11.	Mr. Zia Ahmad	65	67
12.	Mr. Sikandar Khan	66	68
13.	Mr.Zar Badshah	64	65
14.	Mr.Shah Pasand	60	61
15.	Mr.Syed Nabi Shah	64	65
16.	Mr.Baz Khan	60	61
17.	Mr.Abdul Latif	64	65
18.	Mr. Manzoor Ahmad	64	65
19.	Mr.Mohammad Fiaz	59	60
20.	Mrs. Naziran Bibi	64	65
21.	Mr. Farrukh Reza	219	225
22.	Mr.Masood Ali	170	175

10. Unesco Coupons: \$ 19329.01

Unesco Coupons as on June 30, 1985 were not physically verified by us. However, we have relied upon certificate of its physical existence provided by management.

11. Petty Cash Vouchers:

Following vouchers and relating supports were not produced to us for our verification:-

<u>Date</u>	<u>V.No.</u>	<u>P a r t i c u l a r s</u>	<u>Amount</u>
8.7.84	47	Miscellaneous	125
"	48	P.O.L.	54
"	49	"	67
"	50	"	56
"	51	"	50
9.7.84	52	Overtime	152.75
"	53	Medical	20
"	54	P.O.L.	30
11.7.84	55	Entertainment	6
	56	P.O.L.	75
	57	Repair	750
	58	"	149.70
	59	"	72
	60	"	10.59
	61	"	100
	62	Entertainment	4
	63	"	7
18.7.84	64	Printing	60
	65	Stationery	68
	66	"	9.49
	67	"	20.32
			<hr/>
			1906.76

12. Reprography Receipts:

We observed that expenses amounting to Rs.14,178 were incurred from reprography receipts whereas PASTIC - Centre Islamabad is not allowed to incur any expenses out of reprography receipt without prior approval from competent authority which was not available.

13. Documentation Receipt:

We could not verify the receipts in absence of maintenance of proper record.

14. Difference:

Payments are short by Rs.2,539.91 of "Receipt and Payment Account" and no explanation was tendered in this regard.

15. Cash with Bank: Rs.24,054.13

Name of banks with whom balances are held were not available nor they have been confirmed with balance confirmation/bank statements.

(ii) SUB CENTRE LAHORE:

1. There was a difference of Rs.1,410.40 in opening balance of Bank account which was due to the less expenses accounted for in previous years. Receipt and Payment account and those have been accounted in the current year accounts.

2. Telephone Expenses:

Telephone bills of Rs.334.80 and Rs.547.80 paid on July 24,1984 and August 19, 1984 respectively remain unverified in absence of paid bills.

3. Travelling Allowance:

(i) Travelling allowance includes cash payment of Rs.13,500 against Chinese Delegation expenses which remain unverified in absence of supporting evidence regarding expenses.

(ii) Rs.6,570 were paid to Mr. Mohammad Ramzan as advance for travelling expenses but bill submitted is Rs.5,670 and balance of Rs.900 is still recoverable. to date of audit.

4. C.P.Fund:

C.P.Fund of following employees has been short deducted in the month of July and August 1984:-

Name of Employees	Salary	C.P.F und deducted	C.P. should be deducted @12.5%	Less deduction made
1. Mr.Amjad Ali	1,150	139	143.75	4.75
2. Mr.Taj Mohammad	905	110	113.13	3.13
3. Mr.Allah Ditta	592	73	74.00	1.00
4. Babu	520	64	63.00	1.00

5. Cash with Bank:

Bank balance as per bank statement is short by Rs.70 with that cash book balance and the said difference is being brought forward since July 1, 1982.

(iii) SUB CENTRE KARACHI:

1. C.P.Fund Deduction:

Monthly deduction of C.P.Fund of following employees were short as per calculation and this short deduction continued from July 1984 to June 1985:-

Name of Employee	C.P.Fund deducted	C.P.Fund should be
1. Mr.Bashir	162	157
2. Mr.Abdul Qadeer	69	70
3. Mrs. Akhtar Iqbal	305	339
4. Mr. Anwar Zia	60	62

C.P.Fund deducted Mrs. Akhtar Iqbal for month of March, 1985 was Rs.305 instead of Rs.339.

2. Telephone Bills:

Telephone Bills of Rs.1625 for the month of September, December 1985 and June 1986 for telephone No.433151 and telephone bill of Rs.579 for the month of May, 1985 of telephone No.437151 were missing.

3. Following expenses were without supporting evidence:-

V.No.140, dated 12.9.1984	<u>Rupees</u>
Conveyance charges	317.50
Freight and Octroi	321.00
Consumable stores	68.60
Unforeseen expenses	300.00
Books and periodicals	93.75
Electric and gas charges	10.00

V.No.153, dated 1.10.1984:-

Unforeseen expenses	157.00
Freight and cargo charges	130.00
Conveyance charges	182.50
Entertainment charges	34.50
Printing and Stationery	25.50
Repair and maintenance of equipment	206.00
Electric goods	18.00
Consumable store	60.00
Postage charges	9.75

V.No.163 dated 31.10.1984

Freight and cargo	347.00
Unforeseen expenses	99.75
Conveyance charges	300.60
Entertainment	27.50
Repair of typewriter	150.00
Books & periodicals	83.75
Postage and Telegram	19.00
Stationery and Printing	75.00

3,052.70

4. Pakistan Science Foundation Expenses:

Amount of Rs.88,000 spent by Pakistan Science Foundation employees throughout the year. We were unable to verify the expenses due to non-availability of supporting bills.

5. Documentation Receipts:

In the absence of maintenance of proper record, we were unable to verify the receipts.

(iv) SUB CENTRE QUETTA:

1. Other Receipts:

Rs.1,500 deposited in the bank remained unverified in absence of source of deposit.

2. Seminar Expenses:

Sanctioning limit of D.D.O. is Rs.500 but following expenses exceeding the limit were sanctioned by him:-

	<u>Rupees</u>
August, 1984	5,200
September, 1984	1,000
October, 1984	3,000
November, 1984	29,781
December, 1984	1,100
January, 1985	1,000
February, 1985	1,000
March, 1985	2,828
May, 1985	2,300
June, 1985	4,000

3. Travelling and Conveyance:

The travelling expenses of Rs.600 is without any supporting evidence and sanction was granted by D.D.O. while his sanctioning limit is Rs.500. Rs.3000 were paid by the D.D.O. to Mr. Durrani as advance has been accounted for as expenses without proper support of expenses. Rs.4,000 were paid to Mr. Shamsul-Haq as advance on May 2, 1985 has been accounted as expenses without proper bills.

4. Printing and Stationery:

- i) Stationery of Rs.92 supported with purchase bills/cash memos were accounted for Rs.100 in cash book;
- ii) Stationery of Rs.1000 purchased on February 21, 1985 was not recorded in Stock Register.

GENERAL:

- i) Cash in hand for all the centres as on June 30, 1985 were not physically verified by us; however, we have relied upon the certificate provided by the management of its physical existence.
- ii) It is observed that advances made for expenses are directly charged to expenses. We suggest that advance should be debited to person concerned and adjustment for expenses should be made on receipt of proper receipt which will reflect excess/short advance recoverable/payable.
- iii) Ledgers are not being maintained and we suggest early introduction of the same.
- iv) We observed that cash in hand remains Rs.500 of Lahore Centre on each day and amount is drawn from the bank equal to daily expenses. We suggest that first of all opening balance should be utilized.
- v) Detail of B.L.D. coupons were not available of Karachi Centre;
- vi) Stock register has not been maintained properly of Karachi Centre.
- vii) C.P.Fund, Group Insurance and Benevolent Fund paid is without supporting details regarding the period of Quetta Centre.
- viii) Stock register is not properly maintained, by Quetta Centre.

Yours faithfully,

Sd/-

AKBAR AND COMPANY
CHARTERED ACCOUNTANT

LAHORE:65-SHAHRAH-QUAID-E-AZAM

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE

RECEIPT AND PAYMENT ACCOUNTS FOR THE YEAR ENDED JUNE 30, 1985

R E C E I P T S

<u>OPENING BALANCE:</u>	<u>ISLAMABAD</u>	<u>LAHORE</u>	<u>KARACHI</u>	<u>QUETTA</u>	<u>PESHAWAR</u>	<u>TOTAL</u>
Cash in hand	4,222.60	955.60	1,543.15	-	500.00	7,221.35
Cash with Bank	24,054.13	48,935.27	33,024.53	(3,965.98)	53,911.51	155,959.46
UNESCO Coupons in hand	<u>47,173.17</u>	-	-	-	-	<u>47,173.17</u>
	75,449.90	49,890.87	34,567.68	(3,965.98)	54,411.51	210,353.98

GRANTS

Grant from A.G.P.R.	3,669,000.00	-	-	-	-	3,669,000.00
From Science Foundation	-	27,343.00	111,637.50	-	-	138,980.50
Other receipts	-	-	643.00	4,360.60	6,500.00	11,503.60
Received from PASTIC- ISLAMABAD	-	<u>207,964.00</u>	<u>483,388.00</u>	<u>209,956.00</u>	<u>210,356.00</u>	<u>-</u>
	<u>3,744,449.90</u>	<u>285,197.87</u>	<u>630,236.18</u>	<u>210,350.62</u>	<u>271,267.51</u>	<u>4,029,838.08</u>

P A Y M E N T S

Salary & allowances	1,391,805.69	156,628.23	277,796.32	85,144.10	69,814.40	1,981,188.74
Gratuity	59,823.93	-	71,424.00	-	-	131,247.93
Printing, stationery and consumable store	26,988.31	14,133.40	6,206.35	2,428.00	3,241.00	52,997.06
Postage, telegram and telephone	31,673.80	5,552.30	11,453.62	918.15	500.00	50,097.87
Newspapers, Advertisement and publication	22,480.92	566.58	1,321.14	-	123.75	24,492.40
Translation charges	-	8,265.00	-	-	-	8,265.00
Freight and Cargo	1,585.30	-	2,408.60	-	-	3,993.90
Entertainment	2,399.25	209.90	62.00	1,500.00	500.00	4,671.15
Vehicle running expenses	31,070.24	-	376.00	-	-	31,446.24
Local rates and taxes	-	7,473.00	5,271.35	-	150.00	12,894.35
Bank charges	1,710.64	22.20	530.35	29.00	30.00	2,322.19
Gardening	9,142.00	-	-	-	-	9,142.00
Insurance premium	-	783.00	-	-	-	783.00
Uniform and liveries	1,120.00	-	-	-	-	1,120.00
Delegation expenses	-	3,635.00	15,643.70	-	-	19,278.70

Remittance to Sub-centres	1,111,664.00					
Remittance in transit	10,000.00	-	-	-	-	10,000.00
Furniture & fixture	10,906.40	-	-	-	-	10,906.40
Travelling & Conveyance	67,153.62	22,356.19	11,931.95	7,600.00	1,580.00	110,621.76
Deposited in favour of Govt.	28,724.00	-	-	-	-	28,724.00
Seminar expenses	-	-	-	61,707.57	-	61,707.57
Office building rent	-	-	13,800.00	-	96,000.00	109,800.00
Advances	3,200.00	10,000.00	-	1,500.00	6,000.00	20,900.00
Unforeseen expenses	2,895.45	-	6,811.26	-	541.00	10,247.71
Electricity, water and sui gas	121,108.00	2,780.22	3,581.10	-	-	127,469.32
Miscellaneous	-	413.50	-	-	-	413.50
Reprography expenses	128,097.80	-	-	-	-	128,097.80
Welfare Fund	420.00	1,000.00	-	-	-	1,420.00
Medical charges	73,517.23	19,425.82	72,557.65	-	1,436.90	166,937.60
Repair and maintenance of equipment	23,842.00	878.18	652.00	-	-	25,372.18
House rent employees	205,817.41	-	4,000.00	49,200.00	-	259,017.41
Hot & cold charges	-	165.00	-	-	-	165.00
Repair and maintenance of vehicle	-	96.00	-	-	-	96.00
Repair & maintenance of building	30,361.70	-	25,730.20	-	-	56,091.90
Purchase of books	-	601.25	-	-	-	601.25
Purchase of equipments	271,675.00	656.50	-	-	-	272,331.50
PSF expenses	-	-	88,000.00	-	-	88,000.00
Difference	2,539.91					2,539.91
	<u>3,671,722.60</u>	<u>255,841.77</u>	<u>619,557.60</u>	<u>210,026.82</u>	<u>179,917.05</u>	<u>3,825,401.84</u>

CLOSING BALANCE:

Cash in hand	1,500.00	500.00	1,429.10	-	500.00	3,929.10
Cash with bank	24,054.13	28,856.10	9,249.48	323.80	90,850.46	153,333.97
UNESCO Coupons in hand	47,173.17	-	-	-	-	47,173.17
	<u>72,727.30</u>	<u>29,356.10</u>	<u>10,678.58</u>	<u>323.80</u>	<u>91,350.46</u>	<u>204,436.24</u>
	<u>3,744,449.90</u>	<u>285,197.87</u>	<u>630,236.18</u>	<u>210,350.62</u>	<u>271,267.51</u>	<u>4,029,838.08</u>

LAHORE: 65 - SHAHRAH-E-GUAID-E-AZAM

DATED: 15 APR 1989

Sd/- AKBAR & COMPANY
CHARTERED ACCOUNTANTS

PAKISTAN SCIENTIFIC & TECHNOLOGICAL INFORMATION CENTRE

GOVERNMENT RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED JUNE 30, 1985

	<u>R C E I P T S</u>					
<u>CLOSING BALANCE</u>	<u>ISLAMABAD</u>	<u>LAHORE</u>	<u>KARACHI</u>	<u>QUETTA</u>	<u>PESHAWAR</u>	<u>TOTAL</u>
Cash in hand	9.90	-	-	-	-	9.90
Cash with bank	250.00	726.10	8,618.66		2,888.77	12,483.53
						12,493.43
 <u>Receipts:</u>						
Documentation receipts	12,373.15	14,802.40	21,447.58		7,833.50	56,456.63
Reprography receipt	287,263.80	-	-		-	287,263.80
Interest	-	-	-		162.00	162.00
	299,896.85	15,528.50	30,066.24		10,884.27	356,375.86
 <u>P A Y M E N T S</u>						
Reprography expenses	14,178.00	-	-		-	14,178.00
Bank charges	10.00	64.00	-		-	74.00
Transfer in Government Treasury account	-	13,300.00	30,046.50		10,876.27	54,222.77
 <u>Closing Balance:</u>						
Cash in hand	9.90	-	-		-	9.90
Cash with bank	285,698.95	2,164.50	19.74		8.00	287,891.19
	285,708.85	2,164.50	19.74		8.00	287,901.09
	2,99,896.85	15,528.50	30,066.24		10,884.27	356,375.86

LAHORE: 65-SHAHRAH-I-QUAID-I-AZAM
LAHORE: 15 APR 1989

Sd/- AKBAR & COMPANY
CHARTERED ACCOUNTANTS

AKBAR & COMPANY
CHARTERED ACCOUNTANTS

MOHAMMAD AKBAR
B.Com.(Hons.) F.C.A.

The Chairman,
Pakistan Science Foundation,
P-13, Al-Markaz, F-7/2,
Islamabad.

Subject:- AUDIT OF BOOKS OF ACCOUNTS OF PAKISTAN
SCIENTIFIC & TECHNOLOGICAL INFORMATION
CENTRE FOR THE YEAR ENDED JUNE 30, 1985.

Sir,

As per telephonic conversation by the Director Dr. Miss Azra Sultana, we deputed our staff to verify the short comings/observations pointed out in the previous report and we detail that the following information/short comings in our report have been clarified as under:-

(i) ISLAMABAD CENTRE:

1. GRANTS:

These represents the amounts received by the Centre from the Accountant General Revenue of Pakistan during the year under the audit. The amount allocated and remitted to Sub-Centres is as under :-

Name of Centre	Funds Allocated	Fund utilized/ remitted.
Islamabad	2,641,000	2,547,336
Karachi	466,000	483,388
Lahore	208,000	207,964
Quetta	186,000	219,956
Peshawar	168,000	210,356
	<u>3,669,000</u>	<u>3,669,000</u>

From the above it is clear that Sub-Centres have incurred Rs.93,664 excess than the approved budget which were recouped from PASTIC Centre, Islamabad. Expenses exceeding the budget of the Sub-Centres were approved by the Board of Trustees in its 15th Meeting held on 27th June, 1985, vide letter No.PSF/Accounts/4(1)85-86 Pastic-1836, dated October 13, 1985.

2. REPAIR AND MAINTENANCE - BUILDING:

Rs.10,000 were paid to Mr. Nazir Ahmad Chohan vide Voucher No.9, and 10 dated October 9, 1984 as repair and maintenance-building. Supporting bills dated November 7, 1984 have been provided to us.

3. TREASURY ACCOUNT:

Rs.29,037 was deposited in Treasury in November 1984 was explained to be deposited on behalf of Karachi Centre vide Miscellaneous Receipt No.01-1390-Other, dated November 13, 1984.

4. STATIONERY:

Stationery purchased for Rs.398 on July 26, 1984 was entered in the stock register page 213 to page 215 in their respective heads.

5. FURNITURE AND FIXTURE:

Advance of Rs.4,130 paid to Mr. Nazir Ahmad Chohan for purchase of fans on June 25, 1985 have been debited to furniture and fixture account. The supporting bills/cash memos were provided to us.

6. REPAIR OF CAR:

Rs.200 were paid to Driver Alam Shah on June 26, 1985. Supporting evidence of Rs.173 was attached and the balance was not refunded.

7. UNIFORM AND LIVERIES:

Rs.1,120 paid on June 5, 1985 for purchase of mats, supporting bill/cash memo was provided to us.

9. C.P.FUND DEDUCTION:

During the course of audit we observed that deductions of C.P.Fund from employees and this practice remained continued from July 1984 to November 1984 and it was explained that necessary corrections have been made for staff existing after June 30, 1989.

11. PETTY CASH VOUCHERS:

Supporting evidence of all the vouchers mentioned in the previous report was provided to us.

12. REPROGRAPHY RECEIPTS:

We observed that expenses amounting to Rs.14,178 were incurred from reprography receipts whereas PASTIC-Centre Islamabad is not allowed to incur any expenses out of reprography receipt

without prior approval from competent authority which was not available, however, the above mentioned expenses were approved by the Director General, PASTIC, Islamabad on September 30, 1986 and was deposited in Treasury on October 20, 1986.

15. CASH WITH BANKS: Rs. 24,054.13

The balance remains unconfirmed in absence of balance confirmation certificates. Name of banks were not available on books but were got verified from file. It is suggested that cash book should indicate the name of the Branches and instructions should be issued in this regard.

LAHORE CENTRE:

2. Telephone expenses verified

3. Travelling Expenses

Expenses	5,955.85
Paid to Dr. Azra Sultana	596.00
Remitted back	7,037.30
Bank charges	10.85
	<u>13,500.00</u>

3. Rs.6,570 paid to Mr.Mohammad Ramzan Khan, advance for transfer expenses. Later on copy of bill submitted from Karachi for Rs.5,670 balance is recoverable. Why was treated as expenses and recovery of the same was not effected.

4. C.P.Fund

Short deduction recovered in the month of August,1990.

5. Cash Bank.

It has been satisfactorily explained.

(iii) SUB-CENTRE KARACHI

2. Telephone Bills:

Telephone bills of Rs.1,625 for the month of September,1985 for Telephone No.433151 was missing. However, telephone bill of Rs.579 for the month of May 1985 of telephone No.437151 and telephone bills of Rs.986 for the month of December, 1985 and June 1986 of telephone No.433151 has been made available to us.

Yours faithfully,

Sd/- Akbar & Company

LAHORE: 65-SHAHRAH-E-QUAID-E-AZAM
DATED 4 SEPT. 1990

AKBAR & COMPANY
CHARTERED ACCOUNTANTS

MUHAMMAD AKBAR
B.Com.(Hons.)F.C.A.

The Chairman,
Pakistan Science Foundation,
P-13, Al-Markaz, F-7/2,
Islamabad.

Subject:- AUDIT OF BOOKS OF ACCOUNTS OF PAKISTAN
SCIENTIFIC & TECHNOLOGICAL INFORMATION
CENTRE FOR THE YEAR ENDED JUNE 30,1985.

Sir,

Reference to our meeting with Deputy Director, Finance and
Accounts, Pakistan Science Foundation from February 9,1991
to February 11,1991, regarding short comings/observations pointed
out in the previous report and we detail that the following infor-
mation/short comings in our report have been clarified as under:-

i. ISLAMABAD CENTRE:

6. REPAIR OF CAR:

Rs.200 were paid to Driver Alam Shah on June 26,1985. Supporting
evidence of Rs.173 was attached and balance Rs.27 recovered
on June 24, 1985 as per evidence produced.

8. EQUIPMENT:

As per our report Rs.3000 paid to Mr. Mohammad Mobin on
May 8, 1985 vide voucher No.22-B for the purchase of Computer's
assessories was directly charged which, as per evidence produced,
has been recovered from the salary for the month of September,
1990.

13. DOCUMENTATION RECEIPT:

Proper record of documentation receipt was made available
for our verification.

ii. KARACHI CENTRE:

1. C.P.FUND DEDUCTION:

Monthly deduction of C.P.Fund of employees were short as
per calculation and this short deduction continued from July
1984 to June 1985 and it was explained that necessary correction
have been made for staff existing after June 30,1989.

3. Supporting evidence of following vouchers has been provided to us:-

Voucher No.140, dated 12.9.1984
Voucher No.153, dated 1.10.1984
Voucher No.163, dated 31.10.1984

4. PAKISTAN SCIENCE FOUNDATION EXPENSES:

Amount of Rs.88.000 were spent by Pakistan Science Foundation Employees throughout the year. It has been explained that those expenses are of Pakistan Science Foundation and has been accounted for the P.S.F. Books of Accounts and supporting evidence are available with their record.

5. DOCUMENTATION RECEIPT:

Proper record of documentation receipt was made available for our verification.

Yours faithfully,

Sd/-

AKBAR AND COMPANY
CHARTERED ACCOUNTANTS

LAHORE: 65-SHAHRAH-E-QUAID-E-AZAM
DATE: FEBRUARY 11, 1991

ILYAS SALEEM & CO.

AUDITOR'S REPORT

We have examined the annexed Receipts and Payments Accounts of PAKISTAN MUSEUM OF NATURAL HISTORY for the year ended June 30, 1985 and we report that:-

- a. We have obtained all the information and explanations which are required.
- b. In our opinion, and the best of our information and according to the explanation given to us the Receipts and Payments Account which is in agreement with the books of accounts, gives a true and correct view of the state of the Museum affairs as at June 30, 1985.

Sd/-

ILYAS SALEEM & CO.
CHARTERED ACCOUNTANTS

Rawalpindi 11.3.1987

PAKISTAN MUSEUM OF NATURAL HISTORY

RECEIPTS AND PAYMENTS ACCOUNTS FOR YEAR ENDED
JUNE 30, 1985

<u>BALANCE AS AT JULY 1, 1984</u>		<u>1985 (RS)</u>
Cash at Bank		404.72
Imprest Account		720.52
Advance Recovered		10,395.00
Grant in Aid		<u>3,800,000.00</u>
TOTAL RECEIPTS	Rupees	<u>3,811,500.24</u> =====

PAYMENTS

Salaries		2,069,753.20
Entertainment charges		5,533.05
Rent (Office Building)		354,383.00
T.A./D.A.		4,369.75
Rent Residential		337,744.33
Telephone Expenses		111,921.25
Miscellaneous Expenses		93,032.90
Consumable Stores and Stationary		166,496.35
Electricity, Gas & Water charges		69,459.74
Welfare Funds		5,000.00
Advertisements		19,102.87
Postage & Telegrams		488.00
P.O.L. & Repair of Vehicles		149,011.58
Office Equipments		70,734.00
Purchase of Vehicle		190,000.00
Books		<u>69,688.73</u>
		<u>3,782,546.45</u> =====

BALANCE AS AT JUNE 30, 1985

Imprest Account		2,386.78
Cash in hand		<u>26,567.01</u>
	Rupees	<u>3,811,500.24</u> =====

TRUSTEE

TRUSTEE

Sd/-
ILYAS SALEEM & CO
CHARTERED ACCOUNTANTS

PAKISTAN SCIENCE FOUNDATION ACT 1973

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

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

Act No. III of 1973

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

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

It is hereby enacted as follows:-

1. SHORT TITLE, EXTENT AND COMMENCEMENT-(1)
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 or 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 provisions of this Act, to acquire, hold and dispose of property, both movable and immovable, and shall by the said name sue and be sued.

(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 for:

- 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 or technology in particular;
- vi) the organisation of periodical science conferences, symposia and seminars;
- vii) 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
- viii) the exchange of visits of scientists and technologists with other countries.
- ix) Special scientific surveys not undertaken by any other organization 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

iii) establish liaison with similar bodies in other countries.

3. In the performance of its functions, the Foundation shall be guided on question of policy by the instructions, if any, given to 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 OF 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 to the Chairman or the Executive Committee such of its powers and functions as it may consider necessary.

12. **ADHOC COMMITTEE:** 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) donations and endowments; and
- c) income from other sources.

14. **BUDGET:** The Foundation shall cause to be prepared and approve a statement of its receipts and expenditures 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 to 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. APPOINTEMENT 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 REPORT: (1) The annual report of the Foundation, which shall, among other things, clearly bring out the benefits accruing to the nation as a result of the activities sponsored by the Foundation, shall be prepared by the Chairman and submitted, through the Board, to the Federal Government alongwith the audited accounts of the Foundation.

(2) The annual report alongwith the audited accounts of the Foundation shall be laid before the National Assembly.

18. REGULATIONS: The Foundation may make Regulations for the efficient conduct of its affairs.

19. REPEAL: The Pakistan Science Foundation Ordinance, 1972 (LII of 1972), is hereby repealed.

LIST OF SANCTIONED RESEARCH PROJECTS

<u>S.No.</u>	<u>List of Schemes</u>	<u>Amount sanctioned</u>	<u>Name of P.I. & Organization supported:</u>
I. <u>AGRICULTURAL SCIENCES:</u>			
1.	Effects of Aflatoxins in Poultry. P-PU/Agr (81)	1,59,700/-	Dr.S.Ata-ur-Rehman Rizvi, Assistant Professor of Microbiology, College of Veterinary Sciences, <u>Lahore.</u>
2.	Studies on Phenology, germination ecology and control of some important weeds of wheat. P-PU/Agr (86)	3,25,312/-	Dr.S.R.A. Shamsi Associate Professor Department of Botany University of Punjab New Campus, <u>Lahore.</u>
3.	Studies on Culturing of Meloidogyne incognita and Heterodera zeae on excised roots of tomato and corn. S-KU/Agr (88)	1,69,600/-	Dr.M.A. Maqbool, Nematologist, National Nematological Research Institute, University of Karachi, Karachi.
II. <u>BIOLOGICAL SCIENCES</u>			
1.	Ecotaxonomic evaluation of Valuable Plants of Baluchistan. P-PMNH/Bio (123)	86,000/-	Dr.Mrs. Saddiqa Malik Director Botanical Sciences Division, Pakistan Museum of Natural History, <u>Islamabad</u>
2.	Interspecific diversity of phytophagous Hemiptera in different Agro-Ecological Zones of Pakistan. PMNH/Bio (124)	3,68,000/-	Dr. Muhammad Afzal Incharge/Curator Zoological Sciences, Division, PMNH, <u>Islamabad.</u>
3.	Extrachromosomal elements for In Vivo, Genetic Engineering. S-KU/Bio (032)	3,57,800/-	Dr. Miss Hajra Khatoon Professor, Department of Microbiology University of Karachi, <u>Karachi.</u>

- | | | |
|---|------------|---|
| 4. Pest status, food preferences and control of termites of Pakistan.
P-PU/Bio (136) | 4,43,100/- | Dr. Muzaffar Ahmed
Professor Emeritus
Department of Zoology
University of Punjab,
New Campus, Lahore. |
|---|------------|---|

III. CHEMICAL SCIENCES:

- | | | |
|---|------------|---|
| 1. Studies on the hypocholesterolemic effect of <i>Allium sativum</i> Linn and Scientific investigation of its protective action against coronary heart disease.
S-CSIR/Chem (150) | 95,741/- | Dr. Yusuf Ahmed
Pharmaceutical and Fine Chemical Division PCSIR Laboratories, <u>Karachi.</u> |
| 2. Study of the essential oils of species of the plant family Umbelliferae of Pakistan
P-CSIR/Chem (151) | 1,26,235/- | Dr.M.K.Bhatty
Director,
PCSIR Laboratories
Shahrah-e-Jalaluddin Roomi,
<u>Lahore</u> |
| 3. Development of Aminoacid Ester Hydrobromide salts as Antimicrobial, Antimoth and Anticockroach Agents.
C-QU/Chem (154) | 92,065/- | Dr.Z.A. Malik,
Associate Professor
Department of Chemistry, Quaid-i-Azam University, <u>Islamabad</u> |

IV. EARTH SCIENCES:

- | | | |
|---|------------|---|
| 1. Geology & Minerology of selected Pakistani Ophiolites.
P-PU/Earth (27) | 3,75,062/- | Dr.Zulfiqar Ahmad
Assistant Professor
Institute of Geology,
Punjab University,
<u>Lahore.</u> |
| 2. Geology, Stratigraphy and Rodent Fauna of late Miocene sediments of Jalalpur area, Potwar Plateau, Pakistan
C-PMNH/Earth (28) | 1,11,588/- | Dr.S.R.H. Baqri,
Director,
Earth Sciences Division, Pakistan Museum of Natural History,
<u>Islamabad</u> |
| 3. Petrography of coals from salt range and Makarwal area.
C-PMNH/Earth (29) | 1,83,090/- | Dr. Riaz Ali Shah
Consultant,
Pakistan Science Foundation, <u>Islamabad</u> |

V. ENGINEERING SCIENCES:

- | | | |
|---|------------|---|
| 1. Development of fluidized bed coal combustion system based on low grade coal for the supply of clean heat for industrial use. P-CSIR/Eng (20) | 1,67,494/- | Dr. Allah Bakhsh Chaudhry,
Principal Scientific Officer,
PCSIR Laboratories,
Ferozpur Road,
Lahore. |
|---|------------|---|

VI. MEDICAL SCIENCES:

- | | | |
|---|------------|--|
| 1. An etiological study of Urolithiasis in D.G. Khan Muzaffargarh & Bahawalpur P-PMI/Med (91) | 3,18,600/- | Prof. Farrukh A.Khan
Professor of Urology,
Postgraduate Medical
Institute, <u>Lahore.</u> |
| 2. Byssinosis in cotton industries of Sind. S-JPMC/Med (98) | 2,29,300/- | Dr. Salimuddin Aziz
Jinnah Post-graduate
Medical Centre,
<u>Karachi.</u> |
| 3. To study the present pattern of prevalence etiology clinical presentation and management of lower gastro intestinal disorder. S-DMC/Med (102) | 3,39,200/- | Prof. Saleh Memon
Professor of Medical
Unit and the Head of
Department of
Medicine, Civil Hos-
pital, <u>Karachi.</u> |
| 4. Early detection of CA Cx using Colpomicroscope and comparing with other methods. S-DMC/Med (103) | 3,65,750/- | Prof.Noor Jehan Samad
Professor of Obstet-
rics & Gynaecology
Unit-III, Civil Hospital
<u>Karachi.</u> |
| 5. Maternal serum Alpha Feto protein level in 2nd trimester of pregnancy and its correlation with prenatal diagnosis of impending fetal death and open neural tube defects. P-PMI/Med (104) | 60,300/- | Dr. Shahbaz Javed
Professor of Basic Sci-
ences Post-graduate
Medical Institute,
<u>Lahore.</u> |
| 6. General Anaesthetic respiratory function and gama amino butyric-acid (GABA) levels in rat brain. S-AKMC/Med (105) | 1,94,000/- | Dr. Amin Suria
Professor & Chairman
Department of Phar-
macology Agha Khan
Medical College,
<u>Karachi.</u> |

- | | | |
|---|------------|--|
| 7. Colorectal biopsies in the diagnostic evaluation of large bowel disease.
P-FJMC/Med (107) | 3,49,920/- | Dr. Khalida Usmani
Professor of Surgery
Fatima Jinnah Medical
College, Sir Ganga
Ram Hospital,
<u>Lahore.</u> |
|---|------------|--|

VII. PHYSICAL SCIENCES:

- | | | |
|---|------------|--|
| 1. Measurement of electrical conductivity of some Solids at and below room temperature.
S-KU/Phys (41) | 1,94,783/- | Dr.S.M.A. Tirmizi
Vice Chancellor
University of Karachi,
<u>Karachi.</u> |
| 2. Feasibility Study of wind energy utilization in Cholistan.
P-IU/Phys (43) | 3,02,150/- | Dr. M. Bilal Sukhera
Assistant Professor,
Physics Department,
Islamia University,
<u>Bahawalpur</u> |
| 3. Deep level Transient spectroscopy of semi-conductor materials.
C-QU/Phys (44) | 4,72,762/- | Dr.M. Zafar Iqbal
Assistant Professor,
Department of Physics
Quaid-i-Azam
University, <u>Islamabad</u> |

ANNEXURE-III

INSTITUTIONAL SUPPORT

<u>S.No.</u>	<u>Institution</u>	<u>Amount sanctioned</u>
1.	Pakistan Scientific and Technological Information Centre, Islamabad.	Rs. 53,000/- and Rs. 30,916/-
2.	University of Agriculture, Faisalabad.	Rs. 15,000/-
3.	University College, Rawalakot, Azad Kashmir.	Rs.1,00,000/-

ANNEXURE-IV

**PSF GRANTS SANCTIONED TO SCIENTIFIC SOCIETIES AND
LEARNED BODIES FOR THEIR APPROVED OBJECTIVES FOR
THE YEAR 1984-85.**

<u>S.No.</u>	<u>A g e n c y</u>	<u>Amount</u>
1.	Pakistan Academy of Sciences	50,000/-
2.	Scientific Society of Pakistan	50,000/-
3.	Pakistan Association of Scientists and Scientific Professions.	60,000/-
4.	Pakistan Association for the Advancement of Science	50,000/-
5.	Pakistan Society of Nematologists	10,000/-
6.	Zoological Society of Pakistan	20,000/-
7.	Society for the Advancement of Agricultural Science	10,000/-
8.	Biological Society of Pakistan	20,000/-
9.	Pakistan Society of Public Health Engineers.	15,000/-
10.	Pakistan Society of Biochemists.	10,000/-
11.	Chemical Society of Pakistan	20,000/-
12.	Institute of Engineers of Pakistan	50,000/-
13.	Institute of Electrical Engineers, Pakistan	50,000/-
14.	Pakistan Engineering Congress.	30,000/-
15.	Pakistan Institute of Meteorological Engineers	15,000/-
16.	Energy Society of Pakistan	10,000/-
17.	Pakistan Institute of Chemical Engineers	25,000/-
18.	Soil Science Society of Pakistan	10,000/-
19.	UNESCO National Committee on Man & Biosphere Programme	10,000/-
20.	Pakistan Medical Association, Karachi	20,000/-
21.	Solar Cell Energy Society	10,000/-
22.	Sind Science Society	<u>40,000/-</u>
	Total:	5,85,000/- =====

ANNEXURE-V

PSF GRANTS SANCTIONED TO THE SCIENTIFIC SOCIETIES,
LEARNED BODIES AND OTHER AGENCIES FOR THEIR
PUBLICATION PROGRAMMES FOR THE YEAR 1984-85

<u>S.No.</u>	<u>A g e n c y</u>	<u>Publication</u>	<u>Amount</u>
1.	Pakistan Academy of Sciences	Monograph etc.	50,000/-
2.	Scientific Society of Pakistan	Science Bachoon-ke-Liye	30,000/-
3.	Pakistan Association for the Advancement of Science	Pakistan Journal of Science	50,000/-
4.	Pakistan Society of Nematologists.	Journal of Nematology	10,000/-
5.	Zoological Society of Pakistan	Pakistan Journal of Zoology	30,000/-
6.	Society for the Advancement of Agricultural Sciences	Pakistan Journal of Agricultural Sciences	10,000/-
7.	Biological Society of Pakistan	Biologia	30,000/-
8.	Pakistan Society of Biochemists.	Pakistan Journal of Biochemistry	20,000/-
9.	Chemical Society of Pakistan	Journal of the Chemical Society of Pakistan.	30,000/-
10.	Pakistan Institute of Chemical Engineers.	Journal of the Pakistan Institute of Chemical Engineers	25,000/-
11.	Mehran University of Engineering & Technology	Journal of Engineering and Technology	20,000/-
12.	Pakistan Council for Science & Technology	Publication Programme	50,000/-
13.	Pakistan Forest Institute	Pakistan Journal of Forestry.	15,000/-

14. University of Karachi	Journal of Pharmacy	20,000/-
15. University of Agriculture Faisalabad	Pakistan Veterinary Journal	10,000/-
16. Khyber Medical College Peshawar	Pakistan Oral and Dental Journal	15,000/-
17. Government Degree College Lahore.	Journal of Natural Sciences and Mathematics.	10,000/-
	Total:	<u>4,25,000/-</u> =====

ANNEXURE-VI

GRANTS SANCTIONED FOR ORGANISING SCIENCE
CONFERENCE/SYMPOSIA/SEMINAR
1984-85

S.No.	Events	Organizing Agencies	Amount of Grants(Rs)
1.	1st Pakistan Geological congress, 1984	Institute of Geology, University of the Punjab, Lahore.	25,000/-
2.	Training Course in PARC-CIBC Station	Commonwealth Institute of Biological Control PARC-CIBC Station, Rawalpindi	10,000/-
3.	2nd National meeting on Plant Tissue Culture	University of Peshawar	10,000/-
4.	Symposium on Biologically Active Macromolecules.	Department of Chemistry University of Baluchistan, Quetta	61,800/-
5.	Workshop on heat and mass transfer in buildings and structures.	Mechanical Engg. Deptt. University of Engineering and Technology, Lahore.	10,000/-
6.	National Summer School for Talented Students	National Education Council, Islamabad.	40,000/-
7.	Biochemistry update course at JPMC	Pakistan Society of Biochemists, Punjab University, Lahore.	20,000/-
8.	Seminar on Hydrotechnical Engineering	Institute of Engineers Pakistan, Peshawar Centre.	20,000/-
9.	10th International Summer College at Nathiagali.	Centre of Basic Sciences U.G.C. Islamabad	25,000/-
10.	Training course on new methods of gene conservation.	PSF & PARC Islamabad	3,550/-
Total:			2,25,350/- =====

ANNEXURE-VII

TRAVEL GRANTS FOR VISITS ABROAD

<u>Name & Address</u>	<u>Conference/Seminar</u>	<u>Amount sanctioned</u>
- Dr. Rafi M. Chaudhry, Professor Emeritus, Centre for Solid State Physics, University of the Punjab, Lahore.	Registration fee for the 16th International Conference on Phenomena in Ionized Gases at Dusseldorf, Germany	662.84 (not availed)
- Dr. Noor Ahmed, National Centre of Excellence in Physical Chemistry, University of Peshawar, Peshawar	1984 International Chemical Congress of Pacific basin Societies at Honolulu, USA	26,380/-
- Dr. M. Arslan, Deptt. of Biological Sciences, Quaid-i-Azam University, Islamabad.	IIIrd International Congress of Andrology held in Boston, U.S.A.	39,480.24
- Prof. Akhlaq Ahmad, Deptt. of Applied Chemistry University of Karachi, Karachi	5 days short course/ Workshop on advanced water pollution control held at the University of Texas, U.S.A.	44,858/-
- Dr. Shaukat Ali Assistant Professor Department of Physics, University of Punjab, Lahore.	Research workshop in condensed Matter held in Trieste, Italy	8,625/-
	Total:-	1,20,006.08 =====