SMITHSONIAN INSTITUTION

MUSEUM PROGRAMS, SCIENTIFIC AND CULTURAL RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)

LIST OF PROJECTS

Submitted as a supplement to the
fiscal year 1974 budget.

February 1973

MUSEUM PROGRAMS, SCIENTIFIC AND CULTURAL RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)

LIST OF PROJECTS

This list of illustrative projects submitted in support of the appropriation request for FY 1974 is based upon 1) the on-going research projects of American institutions already being supported by the Smithsonian in countries where the United States has accumulated local currencies in "excess" to its needs; and 2) upon similar pending research projects being developed which have either been approved in principle or are in the process of review both by the Smithsonian and by the government of the appropriate "excess-currency" country; 3) new research projects which represent the Institution's selection of those illustrative projects which appear most promising for development and possible funding during FY 1974; these "new" projects listed are based on firm indications of interest from American institutions interested in research abroad.

Actual funding of all new projects, and of those pending projects not yet finally approved, remains contingent upon: a) favorable competitive review on the basis of scientific merit by scientists most competent to judge the worth of each proposal (regularly constituted scientific Advisory Councils assist the Smithsonian in making this competitive review of proposals); b) review and approval of each project as not contrary to the United States national interest by the Department of State and American embassies abroad; c) review and approval of each project by the appropriate agency of the host country; d) where required, conclusion of a satisfactory agreement between the American grantee of the Smithsonian and an appropriate collaborating institution in the host country.

In the same fashion, on-going projects are subject to continuing competitive review, if funding is to be continued.

This means that Smithsonian Foreign Currency funds are committed both by discipline and by country in accordance with the best scientific judgment as to the competitive merit of each project. The following "List of Projects" represents the Institution's best judgment as to how funds, available and requested, will be committed. However, some of the projects listed could be eliminated by an unfavorable scientific review; a finding that the project was not in the U.S. interest; a failure of the host country to approve the project; or, in the case of joint projects, a failure of the American and host country collaborators tc agree on the conduct of the project.

On the other hand, projects not anticipated in this illustrative list but submitted to the Smithsonian Foreign Currency Program by American institutions of higher learning could prove to have greater

acceptance, both here and abroad, and hence be funded ahead of or in place of some of the projects listed here.

As explained in the Special Foreign Currency Program portion of the Institution's Budget Justifications, Israel was removed from the Treasury Department's list of "excess currency" countries at the end of FY 1972 and Morocco at the end of Calendar Year 1972. Hence, no further appropriations are requested for the projects listed here under Israel or Morocco; but it is necessary to enumerate these projects in order to give an accurate picture of the total activities of the Institution's Special Foreign Currency Program.

MUSEUM PROGRAMS, SCIENTIFIC AND CULTURAL RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)

Fiscal Years 1972, 1973, and 1974

Commitments of Funds by Country

Country	*FY 1972 Actual	FY 1973 Estimate	FY 1974 Estimate
Burma	$ 200	$ 8,000	$ 12,000
Egypt	674,400	500,000	4,680,000
Guinea	-	2,000	8,000
India	555,500	1,200,000	1,350,000
Israel	506,600	-	-
Morocco	73,500	160,000	-
Pakistan	13,500	200,000	650,000
Poland	69,200	230,000	650,000
Tunisia	502,600	400,000	500,000
Yugoslavia	999,900	800,000	1,150,000
	$3,395,400	$3,500,000	$9,000,000

Commitments of Funds by Program

Program	*FY 1972 Actual	FY 1973 Estimate	FY 1974 Estimate
Archeology and Related Disciplines	1,685,300	$1,400,000	$6,000,000
Systematic and Environmental Biology	1,421,100	1,400,000	2,000,000
Astrophysics and Earth Science	254,600	500,000	750,000
Museum Programs	21,300	190,000	220,000
Grants Administration	13,100	10,000	30,000
	$3,395,400	$3,500,000	$9,000,000

* Differences of $500 or less due to rounding

MUSEUM PROGRAMS, SCIENTIFIC AND CULTURAL RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)
Fiscal Year 1974

LIST OF PROJECTS

A. ARCHEOLOGY AND RELATED DISCIPLINES

I. BURMA

a. On-Going and Pending Archeology Projects in Burma

	Institution	Title of Project
1.	University of Hawaii, Honolulu, Hawaii	"The Late Pleistocene and Early Holocene Prehistoric Culture of the Dry Zone of the Irrawaddy River Valley, Burma."

This developmental work for a study of the material culture of the peoples who inhabited what is today Burma in the middle and new "stone age" is proposed by the same American scholar who has recently demonstrated that Southeast Asia may be a "cradle of civilization" to vie with Mesopotamia. The project is particularly important in that it would constitute a "first" in cooperation between an American university and the Ministry of Union Culture in Rangoon.

U.S. Dollar Equivalent in Burmese Kyats		
	FY 1974 est.	5,000
	FY 1973 est.	5,000
	FY 1972	200
	FY 1971	1,000

II. EGYPT

a. On-Going and Pending Archeology Projects in Egypt

	Institution	Title of Project
2.	American Research Center in Egypt, Princeton, New Jersey	"Research Activities of the American Research Center in Egypt (ARCE)."

The Center, a consortium of 15 U.S. universities and museums, serves as an indispensable liaison with the Government of Egypt for all American scholars attempting to work in the country. The research projects of practically all the Americans working in Egypt are carried out, directly or indirectly, under its auspices. In the absence of official diplomatic relations between Egypt and the United States the Center continues to maintain an American cultural presence in the country which is much appreciated especially by those Egyptians who still look to America and the West. ARCE projects active in 1972-73 include the continuing epigraphic survey of the Egyptian monuments in Luxor by Chicago House, excavations at the Islamic site of Fustat in Old Cairo, site clearing near the Temple of Osiris in Karnak, two archeological expeditions in the Giza complex, and studies on the Decorative Arts of Ancient Egypt. Also, during the past year the Akhnaten Temple Project, written up in Life and the National Geographic Magazine, was transferred to the ARCE.

U.S. Dollar Equivalent in Egyptian Pounds		
	FY 1974 est.	100,000
	FY 1973 est.	295,000
	FY 1972	434,000
	FY 1971	189,000
	FY 1970	26,000
	FY 1969	109,000
	FY 1968	202,000
	FY 1967	177,000
	FY 1966	259,000

Institution	Title of Project
3. University Museum University of Pennyslvania Philadelphia, Pennsylvania	"The Akhnaten Temple Project."

This project has been written up in Life, the National Geographic Magazine and other magazines and newspapers. It involves the reconstruction by computer methods of the facade of a temple which was destroyed in antiquity and of which only the scattered stones remained. By coding information on individual stones, computer technology allowed photographs of the stones to be rematched so that the appearance of this famous temple is visible to human eyes for the first time since antiquity. A complete book about this project will soon be published. Remaining costs are the phase-out of the project and preparation of the publication. Sponsorship of the data gathering phase by the University of Pennsylvania was completed in FY 1972. (See Item 2, above).

U.S. Dollar Equivalent in Egyptian Pounds		
	FY 1972	5,000
	FY 1971	66,000
	FY 1970	67,000
	FY 1969	60,000
	FY 1968	10,000
	FY 1967	65,000

Institution	Title of Project
4. University Museum University of Pennsylvania Philadelphia, Pennsylvania	"The Dra Abu El Naga Project"

The study of tomb inscriptions at Dra Abu El Naga was begun over fifty years ago by American scholars working in Egypt, but was unable to be carried to completion. The intention of the University Museum is to complete the work and publish the results at long last. When it is completed, the tombs will probably be opened to tourists and other interested viewers.

U.S. Dollar Equivalent in Egyptian Pounds		
	FY 1974 est.	15,000
	FY 1973 est.	25,000
	FY 1972	----
	FY 1971	26,000
	FY 1970	17,000
	FY 1969	17,000
	FY 1968	10,000

	Institution	Title of Project
5.	Smithsonian Astrophysical Observatory, Cambridge Massachusetts	"The Stellar Alignment of the Egyptian Temples at Karnak"

The same astronomer who demonstrated that the massive megaliths at Stonehenge in England were erected by a prehistoric people who nevertheless demonstrated a considerable and surprising knowledge of astronomy believes that the ancient Egyptians too lined up the temples they built with the sun and the stars. This view has often been put forward as a theory, but nobody has ever adequately tested it, primarily becuase astronomers have little knowledge of archeology and archeologists have little knowledge of astronomy. In this project an astronomer proposes to team up with an Egyptologist and try to answer the question of the heavenly orientation of the massive Egyptian temples at Karnak once and for all.

U.S. Dollar Equivalent in Egyptian Pounds		
	FY 1974 est.	7,000
	FY 1973 est.	7,000
	FY 1972	----
	FY 1971	1,000

	Institution	Title of Project
6.	University Museum University of Pennsylvania Philadelphia, Pennsylvania	"Excavation within the Town and Harbor Site of Malkata, Western

This project proposes excavation of selected areas within the palace town of King Amenhotep III (1417-1379 B.C.), and will concentrate upon the harbor of the town, showing in detail how the civilization of ancient Egypt depended upon the Nile to hold itself together. The important period involved is the New Kingdom period in ancient Egyptian history (ca. 1570-730 B.C.).

U.S. Dollar Equivalent in Egyptian Pounds		
	FY 1974 est.	20,000
	FY 1973 est.	56,000
	FY 1972	27,000
	FY 1971	28,000

	Institution	Title of Project
7.	University of Michigan Ann Arbor, Michigan	"Art and Technology of Graeco-Roman Lamps in Ancient Egypt."

Although the people of Egypt are related to the Semitic peoples who live around them the country was for centuries a center of Greek culture and was famous as the "granary" of the Roman Empire. One of the aims of this study is to fit this period of Egyptian history into the wider context of Graeco-Roman Mediterranean civilization in which American scholars have been pre-eminent for generations. A major gap in our knowledge of these times can be filled by this relatively modest study.

U.S. Dollar equivalent in Egyptian Pounds		
	FY 1974 est	2,000
	FY 1973 est.	2,000

Institution	Title of Project
8. National Museum of Natural History, Smithsonian Institution, Washington, D. C.	"Infectious Diseases in Ancient Egyptian Populations."

Primarily through studies of mummies, but also through studies of human remains preserved in burial jars, this investigation is applying the techniques of physical anthropology and medicine to the study of the origin and spread of infectious diseases in antiquity. Disease germs too have undergone an "evolution," and this study will tell us a great deal about the problem of infectious disease and epidemiology today. The Principal Investigator is qualified both as an anthropologist and a doctor of medicine.

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 15,000

Institution	Title of Project
9. University of Texas at Arlington, Arlington, Texas	"Predynastic Museum Research in Egypt."

This study is an exploratory study of materials existing in Egyptian museums which predate the founding of civilization in Egypt. Through this study the Principal Investigator hopes to identify the location of sites which can be excavated to throw light on how civilization developed in Egypt out of prehistoric beginnings now lost to our knowledge.

U.S. Dollar Equivalent in Egyptian Pounds FY 1972 2,000

Institution	Title of Project
10. Center for the Study of Man, Smithsonian Institution, Washington, D. C.	"Conference on African Anthropology."

Through contacts between international scholars specializing in the study of the traditional and contemporary study of culture in rapidly changing and developing Africa, this conference aims to bring together in the form of publishable proceedings what has been learned to date in this field; and to chart the course of further scholarly study which will contribute to the solution of the problems of modernization in the African continent.

U.S. Dollar Equivalent in Egyptian Pounds FY 1972 48,000

b. New Archeology Projects in Egypt

Institution	Title of Project
11. American Research Center in Egypt, Princeton, New Jersey (A Consortium of 15 United States research institutions)	"Excavations of the Ancient City of Memphis, Egypt."

The impact on the daily lives of the native people of the Pharaonic City of Memphis of successive Greek and Roman conquerors is the subject of this study.

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 20,000

Institution	Title of Project
12. Museum of Fine Arts Boston, Massachusetts	"Documentation of the Tomb Chapel of Khufu-Khaf in Eastern Cemetery at Giza."

Studies begun in the 1920's of the vividly colorful tomb-chapels at Giza, in the shadow of the pyramids near Cairo, will be continued in order to complete and publish these studies interpreting the life and times of the "establishment" of Pharaohs.

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 15,000

Institution	Title of Project
13. University of Texas at Arlington	"Excavation of a Predynastic Site near El Khattara, Egypt."

The study of civilization in the Nile Valley before the time of the Pharaoh's, when the familiar massive monuments were built, has been neglected in favor study of the Pharaohs. Initial studies indicate continuous human occupation of the valley and adjacent areas now desert, at a far earlier time. The proposed study would explore these earlier civilizations which may well prove older and richer than those of the better-known Mesopotamian Valley.

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 15,000

Institution	Title of Project
14. University of Akron Akron, Ohio	"Excavations of the Northwest Section of the Great Western Cemetery at Giza near Cairo."

The urgency of understanding the forces demanding change in our urban society has caused scholars to study man's past for a better grasp of the processes of social change. Modern archeology seeks to trace such change in ancient societies. Akron University proposes to collaborate with Cairo University in such a study of the society of Old Kingdom Egypt.

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 16,000

Institution	Title of Project
15. American Research Center in Egypt, Princeton, New Jersey	"Communication by sea between civilizations from Iran to Egypt, 3500 to 2500 B.C."

The study of role of ships in linking major ancient civilizations surrounding the Arabian Sea embraces those of southern Iran, Mesopotamia and Egypt. A study in Egypt of the remains of Pharaonic boats and boat models, and of inscriptions of ancient boats on temple walls and their description in ancient texts will seek to answer the basic question "Was it possible for the Egyptians (or Mesopotamians) to get to Mesopotamia (or Egypt) by sea?"

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 5,000

16. Smithsonian Institution Washington, D. C.	"U.S. Contribution to UNESCO's Nubian Monuments Campaign--The Temples of Philae"

The final United States contribution to the study and conservation of the archeological sites and ruins in the Nile Valley to be inundated by waters impounded by the Aswan High Dam is proposed. President Kennedy proposed in 1961 that the United States make a contribution to the salvage of the temples on the Island of Philae along with three other contributions which have already been made. In making this final contribution, the United States would join at least 18 other nations, as well as Egypt, in salvaging the most important temples of the late Pharaonic, Greek, Roman and early Christian periods in Egypt. (See page C-3 of the Smithsonian Budget Justifications for the Fiscal Year 1974).

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 4,000,000

17. Cornell University Ithaca, New York	"Summer Archeology Program for Architecture Students."

The College of Architecture, Art and Planning of Cornell University proposes to develop historically trained architects through field experience in excavation of Greek and Roman sites.

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 15,000

III. INDIA

a. On-Going and Pending Archeology Projects in India

	Institution	Title of Project
18.	American Institute of Indian Studies, Philadelphia, Pennsylvania (A consortium of 26 universities and colleges)	"Support for the Center for Art and Archeology."

Of the major eastern civilizations of the world India's is the least known. The Center aims to document and photograph key parts of India's vast art treasures in an effort to determine simply what is there. The results of this inventory are of great benefit and interest to the American scholars and institutions attempting to study the unique civilization of one of the most important countries in the world today. Hard dollar support to supplement the rupees being provided by the Smithsonian comes from the JDR III Fund.

U.S. Dollar Equivalent in Indian Rupees	
FY 1974 est.	120,000
FY 1973	113,000
FY 1972	----
FY 1971	121,000
FY 1970	150,000
FY 1969	139,000
FY 1968	145,000
FY 1967	131,000
FY 1966	77,000

	Institution	Title of Project
19.	American Institute of Indian Studies, Philadelphia, Pennsylvania	"Support for the AIIS Center in Poona, India, and for Research Fellowships for American Scholars Working in India."

It would be virtually impossible for any American attempting to perform research in the social sciences and humanities in India to attempt to do so without the facilities provided by the Center--they would not be able to get housing, visas, transportation, permits to work, and so on, without the support of the Center. Since the Center enjoys the highest reputation with the Government of India, the increasing number of Americans who are turning their attention to the study of this vast subcontinent are the beneficiaries of the indispensable services rendered by the Center.

U.S. Dollar Equivalent in Indian Rupees	
FY 1974 est.	300,000
FY 1973 est.	306,000
FY 1972	252,000
FY 1971	479,000
FY 1970	134,000
FY 1969	148,000

	Institution	Title of Project
20.	University of Michigan Ann Arbor, Michigan	"Photographic Documentation of Painting and Sculpture During India's Golden Age from the Fifth to Eighth Centuries, A.D."

Although Indian art commands a higher and higher price on the commercial market today, almost nothing is really known in this country about the rich Indian tradition. The University of Michigan is taking the lead in locating, photographing, and studying important works of art; other American institutions will also have access to the material documented for study purposes.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	5,000
	FY 1973 est.	5,000
	FY 1972	---
	FY 1971	3,500

	Institution	Title of Project
21.	University of Hawaii Honolulu, Hawaii	"To initiate Excavations in Northern India in Conjunction with the Archeological Survey of India."

The nature of early man's culture in Northern India is almost completely unknown and represents a considerable gap in our knowledge, especially when compared to what we know about early man in surrounding areas of South Asia such as the Indus Valley, Ceylon, Thailand. The University of Hawaii has gained considerable experience in working in Asia through its well-known East-West Center, and would be able to apply techniques and compare materials based on its existing background in Asia and the Pacific.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	16,000
	FY 1973 est.	50,000
	FY 1972	----
	FY 1971	2,500

Institution	Title of Project
22. Colgate University Hamilton, New York	"Raksha: Documentation on Film, Tape and through Anthropological Methods of India's Disappearing Traditional Performing Arts."

As is true of so many facets of traditional cultures faced with rapid modernization, India's extremely rich tradition of song and dance, both of the "folk" variety and of a highly sophisticated professional type, is in danger of dying out. This project aims both to preserve and document performing art forms still exemplified by living performers and to the extent possible encourage the continuation of these forms. It has been only in the past few years that the music and dance of India have gained some popularity in America through Indian films and performances. At precisely the moment these Indian performing arts are gaining new audiences they are in danger of disappearing.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	93,000
	FY 1973	----
	FY 1972	116,000

Institution	Title of Project
23. University of Michigan Ann Arbor, Michigan	"Genetic Effects of Inbreeding on Indian Children."

Intermarriage within near degrees of consanguinity has long been known to have marked effects upon the genetic inheritance of the children of such unions. In many cases the children are born with genetic defects. This project thus represents a dimension of Anthropology which could have important implications for human health. The Principal Investigators conducted a classic genetic study at Hiroshima. The marriage habits of the particular subgroup they wish to study in India constitute almost an ideal control group for this study.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	26,000
	FY 1973	----
	FY 1972	34,000

Institution	Title of Project
24. Vassar College, Poughkeepsie, New York, and American Museum of Natural History, New York, New York	"Compendium and Publication of All Indus Inscriptions in India."

This project aims to compile and publish all the inscriptions from the ancient civilization of the Indus Valley. The script used by this civilization has never been deciphered. As was true with hieroglyphics, cuneiform, and other ancient writing systems, a compendium of existing inscriptions is necessary to enable scholars to proceed with the work of deciphering the script.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	20,000
	FY 1973	---
	FY 1972	33,000

Institution	Title of Project
25. Association for Asian Studies, Ann Arbor, Michigan	"Linguistic Research in India."

The modern science of linguistics in America has led the world in the variety and sophistication of its techniques. The study of man's culture through his language can nowhere be more fruitfully studied than through analysis of man's languages. Techniques which are commonplace in this hemisphere, however, have yet to be widely applied in South Asia where it is proposed that this study be conducted.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 18,000

Institution	Title of Project
26. National Museum of Natural History, Smithsonian Institution, Washington, D. C.	"Studies of the Rapidly Disappearing Crafts at the Village Level in India."

As urbanization and industrialization spread in India, crafts which have been passed down in families for generations may be lost. This project will attempt to carry out in India what on-going projects have already been doing in Pakistan and Ceylon; document, photograph and salvage what can be saved of these crafts before the techniques and materials involved are lost to the world through the deaths of the last artisans.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 15,000

Institution	Title of Project
27. American Institute of Indian Studies Philadelphia, Pennsylvania	"Documentation of Ritual Art Forms as Communication Systems of Traditional Cultures."

This project involves the documentation on film and tape, as well as the translation of pertinent Sanscrit dramas, related to the traditional ritual art forms of India. It has long been recognized how important has been the role of these ritual art forms in the culture of India. Modern methods of study will not only yield important data relative to change and development in India but will serve to preserve these forms as one of the important human cultural expressions.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 20,000

Institution	Title of Project
28. University of Michigan Ann Arbor, Michigan	"Tamil Inscription Project"

The inscriptional record of early and Medieval India is a rich treasure of documents as yet only partially available to scholarship. These documents are sources of information on political, social,

cultural and economic history which complement the mainly religious literature of the period. The methods of anthropological linquistics applied to these inscriptions by American scholars are expected to yield new data for the understanding of India's place in the world.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 15,000

	Institution	Title of Project
29.	St. Mary's College Notre Dame, Indiana	"The Culture of the Ishavas of Kerala, South India."

The Izhavas of Kerala, a low-cast Hindu community, nearly ten millions in number, who form one third of the population of the southern-most state of India, have been in the center of political and social ferment in India. A study of this group from the standpoint of cultural anthropology is expected to throw considerable light on the current behavior and motivations of the group and has many implications for the understanding of current unrest in India.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 6,000

b. New Archeology Projects in India

	Institution	Title of Project
30.	Yale University New Haven, Connecticut	"Analysis of Museum Collections of the Fossil Apes and Pre-Humans of India."

No complete analysis of the two most important collections of fossil apes and pre-humans of India has ever been undertaken. Collections at Yale and at the Geological Survey of India will be systematically studied for their importance to understanding man's evolution and fiber glass and plaster casts of significant fossils will be exchanged.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 20,000

	Institution	Title of Project
31.	Yale University New Haven, Connecticut	"Quarrying in the Siwalik Hills for Fossil Remains of Man's Early Primate Ancestors."

South Asian fossil deposits of man's early primate ancestors have not been explored with anything like the thoroughness of the well-publicized deposits in East Africa although the Indian fossils are already more numerous and promise important insights into man's evolution.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 20,000

	Institution	Title of Project
32.	University of Texas Austin, Texas	"A Multi-National Study of Ancient Indic and Indo-European Languages and Cultures"

Many languages, ancient and modern, of Asia and Europe have grown out of an ancient Indic language. This common origin of today's group of Indo-European languages still lies shrouded in the mists of pre-historic time. This study, which would draw together scholars of all nations specializing in the study of Indo-European languages and cultures, proposes to shed light on this major phase of the development of language.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 30,000

	Institution	Title of Project
33.	National Museum of Natural History, Smithsonian Institution	"Study and Collection of Ethnographic Materials. Characteristic of Present-day Life in Bhutan".

The remote, Himalayan Mountain nation of Bhutan is little known in the west. It is proposed to study the daily-life of the people of this Buddhist culture, collect typical personal and household objects, and to prepare an exhibit for the Smithsonian and for other interested institutions in the United States portraying the life of the people in this oriental Kingdom which is rich in fine arts and ancient crafts.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 10,000

IV. ISRAEL

a. On-Going and Pending Archeology Projects in Israel

	Institution	Title of Project
34.	Hebrew Union College Cincinnati, Ohio	"Survey of Archeological Sites in the Negev Desert and Excavations at Tel Gezer."

This excavation is of major interest to all Americans engaged in the study of the Bible, since the reconstruction of the city's history by modern archeological methods throws light on the narratives related in the Bible. Hundreds of divinity students of all denominations from dozens of American colleges and seminaries have been introduced to Bibilical archeology at first hand through the Summer Institute connected with this site.

U.S. Dollar Equivalent in Israeli Pounds		
	FY 1972	40,500
	FY 1971	300,400
	FY 1970	248,340
	FY 1969	68,500
	FY 1968	216,200
	FY 1967	300,000
	FY 1966	150,000

	Institution	Title of Project
35.	University of Missouri Columbia, Missouri	"Excavations at a Greek-Trading Site at Tel Anafa, Israel."

The expansion of Greek civilization in the ancient world following the conquests of Alexander the Great have been better understood as a result of this excavation. A number of American graduate students have been trained on this site under complementary grants from the Ford Foundation.

U.S. Dollar Equivalent in Israeli Pounds		
	FY 1972	36,000
	FY 1970	35,500
	FY 1969	40,000
	FY 1968	60,500

	Institution	Title of Project
36.	American Schools of Oriental Research Cambridge, Massachusetts	"Archeological Investigations of the American Schools of Oriental Research at Tel El Hesi, Khirbet Shema, and Other Sites."

Palestine is of major interest for students of the past not only for its importance in understanding the Bible but also because it was a crossroads of ancient civilizations. These excavations of the American Schools of Oriental Research help to fill in the total picture of the ancient orient on which several generations of American scholars have been working. Organized as a consortium, this institution has enabled small denominational colleges in the United States to participate in Biblical studies which they would be unable to conduct using their own limited resources.

U.S. Dollar Equivalent in Israeli Pounds	FY 1972	150,500
	FY 1971	117,492
	FY 1970	166,713
	FY 1969	50,000
	FY 1968	80,000

Institution	Title of Project
37. National Museum of Natural History, Smithsonian Institution Washington, D. C.	"Excavations at Tel Jemmeh, Southern Israel."

The site at Tell Jemmeh provides us with an understanding of how man adapted to the desert environment Southern Palestine over some 1200 years--in an area which is now being opened for resettlement for the first time in almost 2000 years. For the first time in Israel, new archeological methods are being applied on this site which will enable us to reconstruct the environment as well as the culture of the men who lived on the edge of the desert wilderness. Important knowledge of international trade in ancient times will be brought to light. The site includes Phoenician, Cypriot, Egyptian, and Arabian cultures from the Middle Bronze Age Through the Persian period.

U.S. Dollar Equivalent in Israeli Pounds	FY 1972	51,000
	FY 1971	64,000
	FY 1970	63,000

Institution	Title of Project
38. University of Illinois Urbana, Illinois	"Comparative Studies of the Effects of Cultural Change On Folk Music in Israel."

Israel provides a unique "melting pot" in which to study the cultures of the immigrants who came to Israel from a variety of countries and cultures. However, the traditions brought by these immigrants will disappear within a single generation. It is important that living traditions such as those being studied by this project be studied while they can be studied. These studies in Israel are being correlated with similar studies by University of Illinois scholars in Iran, Tunisia, and Turkey.

U.S. Dollar Equivalent in Israeli Pounds	FY 1972	15,000
	FY 1971	19,860
	FY 1970	31,575

Institution	Title of Project
39. University of Missouri Columbia, Missouri and Corning Museum of Glass, Corning, New York	"To complete Investigations of Ancient Phoenician Glass Manufacturing Sites in Israel."

Excavations produced a glass furnace, and many glass objects including raw materials and waste products which have permitted a unique study still going on in the sponsor laboratories of the state of the art of glass manufacture some 2,000 years ago.

U.S. Dollar Equivalent in Israeli Pounds	FY 1972	5,000

	Institution	Title of Project
40.	University of Arizona Tucson, Arizona and Museum of Anthropology, University of Michigan Ann Arbor, Michigan	"A Program for Research and Training in Prehistoric Archeology: Excavations at the Site of Tabun".

The cave at Tabun in Mount Carmel in Israel was inhabited by men for thousands of years. This project, now being completed, has applied the most modern analytical tools to recreate the development of prehistoric civilization in the eastern Mediterranean region which is so important to our western culture.

U.S. Dollars Equivalent in Israeli Pounds	FY 1972	11,000
	FY 1971	53,000
	FY 1970	56,000
	FY 1969	50,000
	FY 1968	48,000
	FY 1967	50,000

V. MOROCCO

a. On-Going and Pending Archeology Projects in Morocco

	Institution	Title of Project
41.	New York University New York City, New York	"Ksar es-Seghirian Investigation in Islamic Archeology and History."

The Medieval Islamic port-fortress of Ksar es-Seghir on the Moroccan shore of the Straits of Gibraltar will be studied to better understand the social and economic history of the settlements of Muslim western North Africa and Spain during the 10th to the 16th Century A.D., a period almost totally unknown archeologically especially in Morocco. The site will also serve to test effective methods of archeological investigation of large urban settlements.

U.S. Dollars Equivalent in Moroccan Dirhams FY 1973 est. 144,000

	Institution	Title of Project
42.	New York University New York, New York	"The Social History of Urban Planning Urbanization in Morocco."

Rapid Urbanization--The movement to the cities is a world-wide phenomenon. The use of modern anthropological techniques to study this phenomenon as an aspect of culture may help a developing country such as Morocco avoid some of the mistakes which more developed countries have made in the process of urbanization.

U.S. Dollar Equivalent in Moroccan Dirhams FY 1972 3,000

VI. PAKISTAN

a. On-Going and Pending Archeology Projects in Pakistan

	Institution	Title of Project
43.	National Museum of Natural History Smithsonian Institution Washington, D. C.	"Disappearing Ancient Technologies of Pakistan."

With the spread of industrialization around the world crafts and techniques which have been carried on for millenia are in the process of disappearing in our lifetime. The aim of this project is to document and salvage what can be saved of these crafts and techniques--as well as the materials used, many of which can find uses even in the modern world. It is expected that a small scale crafts industry can be maintained as a result of this study which will not only provide saleable hand-made objects to tourists but will help Pakistan's difficult foreign exchange situation and employment situation by providing a saleable craft product.

U.S. Dollar Equivalent in Pakistani Rupees		
	FY 1974 est.	70,000
	FY 1973 est.	50,000
	FY 1972	13,500
	FY 1971	51,533
	FY 1970	76,133
	FY 1969	43,742
	FY 1968	25,128
	FY 1967	6,739

VI. PAKISTAN

b. New Archeology Projects in Pakistan

	Institution	Title of Project
44.	Conservation Laboratory Smithsonian Institution Washington, D. C.	"Study and Application of Techniques for the Conservation of the Indus Valley Civilization City of Moenjodaro".

The Indus River valley has a civilization at least as old as the Nile or the Tigris and Euphrates River Valleys. One of its few great city excavations, Moenjodaro, is threatened with complete destruction because the water table is higher today than at the time the city flourished. As a consequence, moisture, carrying with it corrosive salts, penetrates the ancient bricks causing the walls to crumble. It is proposed to marshall American conservation talent to seek ways to prevent the deterioration of what remains of this ancient city.

U.S. Dollars Equivalent in Pakistani Rupees FY 1974 est. 75,000

	Institution	Title of Project
45.	National Museum of Natural History Smithsonian Institution Washington, D. C.	Salvage Archeological Study of Indus Valley Settlements to be Inundated by the waters, Impounded by the Tarbela Dam.

It is proposed to assist the Archeological survey of Pakistan in the urgent study of settlements in the valley above the Tarbela Dam which is under construction on the Indus River. This area is a critical one to study in seeking an understanding of the migrations of Aryan peoples which underlies much of the early history of both East and West.

U.S. Dollar Equivalent in Pakistani Rupees FY 1974 est. 70,000

46.	University of California Berkeley, California	Excavation of the Prehistoric coastal city sites of Sutkugon-dor Balakot in Pakistan.

Our knowledge of the world before languages were written rests on archeological excavations which unearth objects commonly used in ancient settlements. The extent of communication and trade between different cultures can be understood on the basis of discovery of pottery not characteristic of local production but of distant civilizations. The sea links between the civilizations of the Persian Gulf, including Mesopotamia, and those of the Indus River Valley are believed to have been extensive but they are not documented. These excavations propose to determine the extent of this communication by sea.

U.S. Dollar Equivalent in Pakistani Rupees FY 1974 est. 50,000

	Institution	Title of Project
47.	Vassar College Poughkeepsie, and the American Museum of Natural History, New York, New York	Survey and Excavation of Prehistoric Sites in Pakistan.

Our modern Indo-European languages have a common ancestor, it is believed, in the Indic language of peoples who migrated through and inhabited the Middle East, and Central and South Asia. An archeological survey of the region of north west Pakistan through which these peoples are believed to have passed in Prehistoric times is proposed to test our current conceptions of these Indic language speaking peoples. Excavations of carefully chosen sites would follow the survey.

U.S. Dollar Equivalent in Pakistan Rupees FY 1974 est. $50,000

VII. POLAND

a. On-Going and Pending Archeology Projects in Poland

	Institution	Title of Project
48.	State University of New York, Buffalo, New York (Formerly a University of Michigan project)	"The Earliest Neolithic Settlements in Poland."

Much of what is known about early man has been uncovered on the continent of Europe, but the opportunities of American scholars to participate in this work has been limited by the extra funds required to work abroad and limited access to the best site. This is the only American excavation which has been allowed in Poland in recent years, and provides cultural links between Polish and American scholars which have been difficult to establish and maintain during the era of the Cold War.

U.S. Dollar Equivalent in Polish Zloties		
	FY 1974 est.	32,000
	FY 1973 est.	53,000
	FY 1972	56,000
	FY 1971	44,000
	FY 1969	37,000
	FY 1968	36,000
	FY 1967	22,000

	Institution	Title of Project
49.	Washington State University, Pullman, Washington	"To Excavate a Prehistoric Flint Mining Complex on the Kamienna River in Poland."

This study proposes to bring to bear the skills of geologists, paleobotanists, archeologists and anthropolotists to study the early technology of flint mining and flint artifact manufacture during the New Stone Age and at the beginning of the Iron Age. A study such as this provides information about the movement of peoples from place to place in Europe in very early times, and about the rise and fall of successive centers of culture.

U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	25,000

	Institution	Title of Proposal
50.	Washington State University, Pullman, Washington	"To Study Pre-Mesolithic Fossils in Poland."

"Pre-Mesolithic" refers to the Middle Stone Age. The fossils in question are collections of human skeletons. No comprehensive study of the fragments of fossil remains of man and his primate ancestors has been undertaken. Measurements of whole skulls provide the basis for most of what is known of early man. The consequent sketchy picture of his evolution could be more fully painted if a system for the measurement and analysis of the many fossil fragments of early Stone Age man in the museums of Europe, and particularly of Poland, could be developed to employ computers to speed the analysis.

U.S. Dollar Equivalent in Polish Zloties FY 1974 est. 10,000

b. New Archeology Projects in Poland

	Institution	Title of Project
51.	Southern Methodist University, Dallas, Texas	"Recent Developments in Techniques of Analysis of Old Stone Age Artifacts".

Computers serve the prehistoric archeologist in identifying the types of stone tools, which are the principle relic of these ancient societies, and in analyzing the distribution of the tools of different kinds in prehistoric settlements to show what the pattern of family and community life was. Collaboration with the museum for the Study of the History of Material Culture of the Polish Academy of Sciences is proposed.

U.S. Dollar Equivalent in Polish Zlotys FY 1974 est. 10,000

VIII. TUNISIA

a. On-Going and Pending Archeology Projects in Tunisia

	Institution	Title of Project
52.	Dumbarton Oaks Center for Byzantine Studies Washington, D. C. and University of Iowa, Iowa City, Iowa	"A Corpus of the Ancient Mosaics of Tunisia."

The Tunisian mosaics are among the most distinctive of the mosaics which the ancient Romans left everywhere they lived. Some unique ones of the Christian period remain in Tunisia. These priceless treasures are being exposed one by one because of rapid urban development and unless taken up, and transported to safety in a museum, or preserved in some other fashion, they will be lost to humanity. The "corpus" of Tunisian mosaics being prepared by this project includes a complete, detailed description of each mosaic unearthed; all this data will henceforth be available generally in university and museum libraries.

U.S. Dollar Equivalent in Tunisian Dinars		
	FY 1974 est.	70,000
	FY 1973 est.	70,000
	FY 1972	84,000
	FY 1971	58,000
	FY 1970	59,000
	FY 1969	29,000

	Institution	Title of Project
53.	New York University New York, New York	"Modernization in Rural Tunisia."

This is a joint project in which an experienced American investigator will team up with an experienced Tunisian investigator to examine the social and cultural changes which are coming about in rapidly developing Tunisia; and the implications of these social and cultural changes for further development. The study will focus on two communities in the Mejerda Valley of Central Tunisia which have been traditionally rich agricultural centers but which are now faced with the crisis of adjustment to modern ways and to a modern agricultural marketing system.

U.S. Dollar Equivalent in Tunisian Dinars		
	FY 1974 est.	30,000
	FY 1972	51,000

b. New Projects in Tunisia

	Institution	Title of Project
54.	University of Illinois Chicago, Illinois	"The Ecology and Settlement Pattern Archeology of the Iberomaurusian Culture of North Africa".

Computers and atomic technology serve students of stone age cultures in describing ancient communities which left no written records

and in comparing cultures of adjacent regions to understand their influence on one another. This proposal would apply these techniques to the stone age cultures of North Africa in excavating sites near the Oasis of Gafsa in Tunisia.

U.S. Dollar Equivalent in Tunisian Dinars FY 1974 est. 13,000

	Institution	Title of Project
55.	University of Illinois Chicago, Illinois	"Survey and Excavation of Late Paleolithic Sites near the Oasis of Gafsa, Tunisia".

Modern analysis of charcoal, pollen and other fossil remains of the plants and animals found in what might seem to be sites marked only with scattered stone tools permits the reconstruction of the ecosystem and man's settlement pattern in it. It is proposed to study in this way, the Late Paleolithic Culture at the Oasis of Gafsa in Tunisia in collaboration with the Bardo Museum in Tunis.

U.S. Dollar Equivalent in Tunisian Dinars FY 1974 est. 10,000

IX. YUGOSLAVIA

a. On-Going and Pending Archeology Projects in Yugoslavia

	Institution	Title of Project
56.	University of Minnesota Minneapolis, Minnesota	"Excavations at the Palace of the Roman Emperor Diocletian at Split, Yugoslavia."

After the Barbarian invasions overran the Roman Empire the huge palace of the Roman Emperor Diocletian at what is today Split was abandoned, and an entire medieval city later grew up within the palace walls. This excavation represents a unique opportunity to learn more about Roman times since it is being conducted in conjunction with the urban renewal program of the modern Yugoslav city of Split. Since people live or will live in new houses on the sites, they can only be excavated in connection with the urban renewal project now going on.

U.S. Dollar Equivalent in Yugoslav Dinars		
	FY 1974 est.	70,000
	FY 1973 est.	70,000
	FY 1972	78,000
	FY 1971	13,000
	FY 1970	60,000
	FY 1969	78,000
	FY 1968	33,000

	Institution	Title of Project
57.	Denison University Granville, Ohio	"Excavations at Sirmium, a Roman Provincial Capital."

Among other things, this project serves to support the training program in archeology of one of America's smaller universities, drawing American students from a number of universities, primarily in the midwest. The site was one of the important provincial capitals of the Roman Empire and its excavation provides new information about community life, and civil and military organization in Roman times not available from the "classical" sites in countries such as Italy. This project is being completed, and the publication of the results of this research is in preparation.

U.S. Dollar Equivalent in Yugoslav Dinars		
	FY 1973 est.	30,000
	FY 1972	30,000
	FY 1971	61,000
	FY 1970	62,000
	FY 1969	65,000
	FY 1968	34,000

	Institution	Title of Project
58.	University of California, Los Angeles, California	"Excavation of an Early Neolithic Settlement at Anza, Macedonia, Yugoslavia."

The site at Anza has through history been a crossroads of the cultures and civilizations, all formative in the development of Western Civilization. This excavation has broken new ground in European archeology since Americans and Yugoslavs working together have been able to combine techniques and traditions. This is the first American excavation, and perhaps one of the first American cultural enterprises of any kind to be mounted in historic Macedonia. An entirely distinct culture in Eastern Europe has been uncovered as a result of this work, and the results are already beginning to appear in published form for the benefit of the scholarly community.

U.S. Dollar Equivalent in Yugoslav Dinars		
	FY 1972	31,000
	FY 1970	50,000
	FY 1969	31,000

	Institution	Title of Project
59.	University of Texas Austin, Texas	"Archeological Excavations at Stobi."

Macedonia was a crossroads in ancient times and the excavation of this classical site will provide us with considerable knowledge about the interaction between the East and the West.

U.S. Dollar Equivalent in Yugoslav Dinars		
	FY 1974 est.	80,000
	FY 1973 est.	35,000
	FY 1972	76,000
	FY 1970	40,000

	Institution	Title of Project
60.	Southern Illinois University Carbondale, Illinois	"The Cultural, Economic, and Social Impact of Rural Road Construction."

With so many areas around the world rapidly modernizing, the results of this study could prove extremely valuable in many parts of the world. The basic question posed is: what happens when a road is built into a village or rural area previously isolated from the outside world. What happens to the people, their culture, their families, patterns of trade, immigration and emigration, and so on. The Principal Investigator is an American whose parents immigrated to this country from Yugoslavia, has spent time in Yugoslavia on scholarships, speaks several Slavic languages, and is thus admirably suited to conduct a study such as this in conjunction with Yugoslav colleagues.

U.S. Dollar Equivalent in Yugoslav Dinars		
	FY 1974 est.	85,000
	FY 1973 est.	30,000

	Institution	Title of Project
61.	University of Massachusetts, Amherst, Massachusetts	"The Changing Structure of the Family in Serbia in the Context of Ecological, Socio-Economic and Related Demographic Changes since the 19th Century."

The main objective of this project is to contribute to greater understanding of the modernization of familial social structure in rapidly developing Yugoslavia. It will be a joint American-Yugoslav project, and will make use of existing material in archives pertaining to traditional family structure and of direct field observations and questionnaires to determine how family structure is changing and what the implications of those changes will be. What happens in an Eastern European country such as Yugoslavia in the area of social and familial change will have value for understanding social change elsewhere.

U.S. Dollar Equivalent in Yugoslav Dinars — FY 1974 est. 65,000
FY 1973 est. 41,000

	Institution	Title of Project
62.	Harvard University Cambridge, Massachusetts	"Oral Epic Poetry of Avdo Mededovic."

This project aims to make available to American scholars an English translation of the famous oral Servo-Croatian epic poem by the illiterate Yugoslav poet Avdo Mededovic. Epic poetry delivered orally by bards is a cultural tradition which goes back to the Greek poet Homer and before. What is important in this instance is the work of a contemporary man who functions essentially as Homer functioned among the early Greeks. The transcription and translation of the poem which he sings aloud will throw a great deal of light not only on Yugoslav customs and cultural traditions specifically but upon those of any traditional society where literacy is uncommon and where oral traditions accordingly have to be depended upon.

U.S. Dollar Equivalent in Yugoslav Dinars — FY 1973 est. 13,000

	Institution	Title of Project
63.	University of Missouri Columbia, Missouri	"Study of Comparative Material for Late Roman Pottery Found at Jalame."

The purpose of this project is to enable study of a variety of Roman pottery found on sites in Yugoslavia in comparison with similar materials found on classical sites in Israel by University of Missouri excavations (See, for example, Item #39 above). This modest project will have disproportinate results in helping to fill in our knowledge of the Roman Empire that ringed the entire Mediterranean Sea.

U.S. Dollar Equivalent in Yugoslav Dinars — FY 1972 3,000

b. New Archeology Projects in Yugoslavia

	Institution	Title of Project
64.	Peabody Museum, Harvard University Cambridge, Massachusetts	"Culture Change and Environmental Adaptation of the Early Food-Producers of Yugoslavia".

An area of long standing interest to researchers of early man is that of the organizational changes that took place as man shifted from a food-gathering to a food-producing economy. The site chosen for this study, Rudnik, is unique for southern Serbia in that it contains three distinct Stone Age habitation levels, dating back to approximately 5500 B.C.

U.S. Dollar Equivalent in Yugoslav Dinars FY 1974 est. 83,000

	Institution	Title of Project
65.	Brooklyn College, City University of New York, New York	"Excavations at Viminacium"

During Roman times, Viminacium was a military outpose, located near a major road leading northward along the Morava River. Current evidence suggests the site has not since been occupied. Excavations here will provide an excellent opportunity to explore a key Roman outpost with reference to its organization, history and external relationships and to relate this information to that developed in excavations (also supported by the Smithsonian) of the nearby Roman city of Sirmium.

U.S. Dollar Equivalent in Yugoslav Dinars FY 1974 est. 107,000

	Institution	Title of Project
66.	Fogg Museum Harvard University Cambridge, Massachusetts	"Study of Excavated Materials from the Early Neolithic Site of Starcevo".

Our understanding of early neolithic culture in southeastern Europe stems in large part from the careful chronology of settlement prepared on the basis of excavations conducted by a Fogg Museum expedition at Starcevo in Yugoslavia in the early 1930's. Because of the abiding importance of the results of that expedition, one of its members is reviewing the earlier work and subjecting the site and its cultural objects to the test of modern excavation and laboratory analytical techniques. It is proposed that the results of these new studies will be published together with the full report of the original excavation which has not heretofore been published.

U.S. Dollar Equivalent in Yugoslav Dinars FY 1974 est. 11,000

B. SYSTEMATIC AND ENVIRONMENTAL BIOLOGY

I. BURMA

a. On-Going and Pending Biology Projects in Burma

None.

b. New Biology Projects in Burma

	Institution	Title of Project
67.	Missouri Botanical Garden St. Louis, Missouri	"Collection and Classification of Burmese Mosses."

The Missouri Botanical Garden and Rangoon University proposes to collect the Mosses of Burma to fill an important gap in the collections in St. Louis which are the best for Systematic Studies of the Moss flora of the world.

U.S. Dollar Equivalent in Burmese Kyats — FY 1974 est. 5,000; FY 1973 est. 3,000

	Institution	Title of Project
68.	University of California at Davis	"Survey of Endangered Species."

No modern scientific survey of the animals of Burma which are threatened with extinction has ever been made. Because human population pressures constantly reduce the natural habitat of wild life current surveys are essential to develop sanctuaries to prevent extinction of important animals. This project would be undertaken together with the International Union for the Conservation of Nature and Natural Resources.

U.S. Dollar Equivalent in Burmese Kyats — FY 1974 est. 2,000

II. EGYPT

a. On-Going and Pending Biology Projects in Egypt

	Institution	Title of Project
69.	National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"A Serological and Ectoparasite Survey of the Migratory Birds of East Africa."

Based in Egypt, this project traps representative birds migrating through Northeastern Africa, collects blood and ectoparasite samples, and then bands the birds before releasing them (reports on the capture of banded birds from other places in Europe will yield significant information about the migration patterns of the birds). Information about the migratory patterns of the birds, plus an analysis of the blood samples and the parasites collected from the birds, has already provided significant information about the role of migrating birds in spreading diseases which can attack crops, animals, and man. The Rockefeller Virus Laboratories are collaborating with the Smithsonian on this project.

U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est	30,000
	FY 1973	28,000
	FY 1972	25,000
	FY 1971	44,000
	FY 1970	25,000
	FY 1969	34,000
	FY 1967	25,000

Institution	Title of Project
70. Union College Schenectedy, N.Y.	"Plankton Communities of the Nile River Delta."

Assessing the impact of man's engineering undertakings upon the total environment is an urgent area for study. It is becoming clear that engineering studies alone cannot provide adequate information to governments for decisions about what will, in fact, increase the well being of the human population. Reduction of the flow of nutrients into the Mediterranean because they are trapped behind the Aswan Dam has all but eliminated the shrimp fisheries of the Nile Delta. This study proposes to monitor the changes in the coast line and in the amount of salt in previously-fished fresh water lakes in the delta resulting from the change in the Nile's flow.

U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est.	80,000
	FY 1973 est.	47,000

b. New Biology Projects in Egypt

Institution	Title of Project
71. University of Michigan Ann Arbor, Michigan	"Systematic Studies of the Mollusk Genus Bulinus in Africa and Adjacent Regions."

This project is a "systematic" study of one common genus of African snail, especially abundant in Egypt. As disease carriers snails are animals whose biology and habits it is particularly important to understand. These studies will be coordinated with similar studies done by the University of Michigan's Museum of Zoology in other areas of the world such as India (see Item #78 below). A biologist at the University of Cairo will directly collaborate with his Michigan colleagues on this study.

U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est.	28,000
	FY 1973 est.	3,000

Institution	Title of Project
72. Southern Methodist University Dallas, Texas	"Egyptian Geology and Paleontology."

The initial phase of this project enabled American paleontologists to participate in a symposium on Egyptian geology and paleontology sponsored by the Geological Survey of Egypt. This symposium brought together knowledge and expertise which will now be published for the first time in the form of proceedings. Still another result of contacts made by Southern Methodist University is a project planned with the Geological Survey for excavating pliocene deposits of the common ancestor of all contemporary African rodents.

U.S. Dollar Equivalent in Egyptian Pounds — FY 1974 est. 7,000; FY 1973 est. 3,000; FY 1972 16,000

	Institution	Title of Project
73.	Smithsonian Institution Washington, D.C.	"Legal Controls on Environmental Degradation."

World wide concern about the environment has motivated many of the scientific studies of the environment, such scientific studies are represented among the projects for which "excess currencies" are being sought by the Smithsonian. The present project aims to focus on another aspect of the environmental crisis: the way in which laws can contribute to environmental degradation; and, conversely, the way in which laws can help contribute to positive solutions to environmental problems. Scientists, lawyers, and educators would be asked to contribute to this symposium on environmental law.

U.S. Dollar Equivalent in Egyptian Pounds — FY 1974 est. 60,000

	Institution	Title of Project
74.	National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"Publication of Two Memoirs by Societe Entomologique d'Egypte."

The grant provides funds for publication of two posthumous manuscripts. The first manuscript by A. Afieri entitled "The Coleoptera of Egypt" provides a systematic list of the fauna, its distribution throughout the country, monthly occurrence, ecological information and taxonomic notes. The second manuscript by H.C. Efflatoun Bey entitled "A Monograph of Egyptian Diptera, Part VII: Family Bombyliidae, Section II-Subfamily Bombyliidae Tomophthalmae" is a classical systematic monograph with keys to species and provides detailed description of the species and numerous diagnostic illustrations.

U.S. Dollar Equivalent in Egyptian Pounds — FY 1974 est. 10,000

	Institution	Title of Project
75.	University of Michigan Ann Arbor, Michigan	"The Effect of Impoundment in Lake Nasser on River Nile Quality and Use in Egypt."

There is much concern in the United States today with the evaluation and planning of water resources management. The research findings and the techniques tested under this study will have applicability to comparable water systems in the U.S. and other parts of the world. This project will assess alternatives in the long-term resources development of the Egyptian part of the River Nile.

U.S. Dollar Equivalent in Egyptian Pounds — FY 1974 est. 127,000

III. GUINEA

a. On-Going and Pending Biology Projects in Guinea

	Institution	Title of Project
76.	Chico State College Chico, California	"Systematic Studies of Ants and Parasites Associated with Man."

Eighty percent of the animals on the earth are insects. Two of the most important groups of these from the point of view of their affect on mankind are ants and termites. If we are to understand how to reduce the damage brought about by these insects, we have to know their precise nature and their role in the economies of other animals. This particular study proposes the collection of ants and termites in Guinea and particularly of the beetles (Staphylinidae) associated with them. This study is an extension of others by the same investigators covering the tropics in both this hemisphere and in Africa and Asia.

U.S. Dollar Equivalent in Guinean Francs		
	FY 1974 est.	8,000
	FY 1973 est.	2,000

IV. INDIA

a. On-Going and Pending Biology Projects in India

	Institution	Title of Project
77.	National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"Indian Migratory Bird Project"

This project aims to continue the study of the patterns of migration of birds of South Asia as well as their possible role in the spread of diseases harmful to animals, crops and man (a continuation of World Health Organization studies) and to employ the information obtained in the preparation of a Handbook of Indian Birds. The handbook and the studies of migration and of possible disease transfer are essential elements in understanding the basic ecology of India where man and a wide variety of animals live in closer interrelation than any where else on earth.

U.S. Dollar Equivalent in Indian Rupees	
FY 1974 est.	15,000
FY 1973 est.	12,000
FY 1972	25,000
FY 1971	35,000
FY 1970	18,000
FY 1969	3,000

	Institution	Title of Project
78.	University of Michigan Ann Arbor, Michigan	"Cytological Studies of Indian Mollusks"

Studies are continuing in attempts to understand better and thus control snails (mollusks), animals known to carry diseases which attack man and his domesticated animals. The diseases include shistosomiasis, liver fluke and other worm parasites. These diseases are wide spread in the tropics and they have a way of spreading dramatically in an area where hydroelectric dams and irrigation canals are being built, disturbing the ecological balance. These studies employ the most modern techniques to understand the basic genetic materials of the cells of snails and thus to make it possible to tell one family of snails from another when they are from all outward appearances identical. These earlier studies are now to be continued in India, with the same team of scientists also planning to continue this work elsewhere, notably in Egypt (see item #71, above).

U.S. Dollar Equivalent in Indian Rupees	
FY 1974 est.	5,000
FY 1973	----
FY 1972	----
FY 1971	25,000
FY 1970	26,000
FY 1969	25,000

	Institution	Title of Project
79.	National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"Productivity of Tropical Lakes in South India"

This study of the way things grow in fresh water in the tropics is one of the many studies essential to an understanding of the ways man can prevent the pollution of productive bodies of water and develop them as a source of high protein food.

U.S. Dollar Equivalent in India Rupees		
	FY 1974 est.	20,000
	FY 1973	31,000

	Institution	Title of Project
80.	Yale University New Haven, Connecticut	"Habitat Relationships and Distribution of Wild Ungulates in the Gir Forest of India"

Study of the wilderness has a critical role to play in developing long-range guidelines for management of natural resources. By comparing studies of lands cultivated by man with those left to grow naturally, it is possible to learn what the land is capable of producing as opposed to what man asks the land to produce. Plans for the conservation of wilderness grow out of studies like those in the Gir Forest. This study of wild ungulates (hooved animals) in the Gir Forest is now completed, but Yale University plans to undertake studies concerned with other aspects of this important wildlife area in India.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1973	5,000
	FY 1972	30,000
	FY 1971	26,000
	FY 1970	35,000

	Institution	Title of Project
81.	National Museum of Natural History, Smithsonian Institution, Washington,D.C.	"A Flora of the Hassan District, Mysore State, Ghat Mountains Southwest India"

Underlying all environmental studies on land must be thorough studies to identify accurately each form of plant life and the place of each form in the community of living things, the ecosystem, of which it is a part. This study in India is one such carefully controlled study of a limited area with a wide range of plant life resulting from rainfall which varies from less than 30 inches to somewhere between 100 and 300 inches per year. It will provide correctly identified specimens for the National Herbarium at the Smithsonian strengthening these collections with materials from the Eastern Hemisphere. United States scientists, outstanding in the study of the tropics of our own hemisphere, are now undertaking comparative studies in other tropics, the essential next step in understanding the biology of this climatic zone.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	2,000
	FY 1973 est.	8,000
	FY 1972	11,500
	FY 1971	26,000

	Institution	Title of Project
82.	National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"Systematic and Behavioral Studies of Flatfishes and Gobioid Fishes"

Fish to be studied under this project are similar to the sole and the flounder which are common in American diets. The Knowledge of the nature, behavior and distribution of these fish in Indian waters will contribute to commercial fisheries there as well as to an understanding of the evolution of marine animals into semi-aquatic animals or those adapting to life on land.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	4,000
	FY 1973 est.	8,000

	Institution	Title of Project
83.	University of Georgia Athens, Georgia	"Organic Productivity & Nutrient Cycling in Tropical Ecosystems"

Management of the landscape depends on an understanding of nature's process of growing plants and the circulation of plant food by this process. Research in Europe and North America has provided much information about these processes in temperate climatic regions, but little is known about these processes in tropical regions. This project proposes study of forest, grassland and cultivated land by techniques tested in the Western Hemisphere by scholars from one of the United States' pioneering ecological research institutions.

U.S. Dollar Equivalent in Indian Rupees	FY 1973 est.	36.000

	Institution	Title of Project
84.	Texas A & M University College Station, Texas	"International Spread of Plant Disease by Means of Airborne Organisms"

The air carries much biologically significant material such as the pollen which fertilizes plants and causes hay fever or the exhaust fumes of automobiles and industries which block out the sun's rays over our cities, affecting plants, animals and man. Other living organisms are carried in the atmosphere, such as the spores of fungus, disease microbes, and even minute animals called aphids. This proposal would extend to India studies initiated in the United States under the International Biological Program designed particularly to study plant diseases which are transmitted through the air without respect for international boundaries. The purpose is to understand the evolution of the diseases as well as to record the losses in plant life resulting in the diseases. Such studies are but one element in a detailed program which seeks to promote and coordinate internationally oriented research on critical problems in this field of aerobiology and to ensure the application of standardized techniques and the exchange of comparable data between disciplines and nations.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	5,000
	FY 1973 est.	2,000

	Institution	Title of Project
85.	Utah State University Logan, Utah	"Comparative Studies in Arid Climates"

Large areas of Southwestern United States are desert. The study and management of this landscape can be expected to provide specific data to improve the well-being of Americans of that area. Full understanding of the relationships of the plants and animals of this area and of the cycling of nutrients through such an ecosystem requires comparative studies in roughly similar regions elsewhere. The desert areas of India provide excellent comparative study areas. They can be expected also to provide vital data to the Indian Government where the expansion of deserts and the consequent loss of productive land is going forward at an alarming pace.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	10,000
	FY 1973 est.	5,000

	Institution	Title of Project
86.	Utah State University Logan, Utah	"Ecology and Behavior of the One-Horned Rhinocerous, an Endangered Species"

This study of the ecology of the Kaziranga Wildlife Sanctuary along the Bhramaputra River will provide urgently needed data to ensure the conservation of the one horned rinocerous and the wilderness essential for his survival as well as to guide the Government of Assam in management of similar lands in northeastern India.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	10,000
	FY 1973	----
	FY 1972	----
	FY 1971	4,000

	Institution	Title of Project
87.	Texas A & M University College Station, Texas	"Ecology of Indian Ungulates in the Wildlife Sanctuaries of Rajasthan"

The University of Texas has intensively studied the biology of hooved animals (ungulates) from different parts of the world to develop commercial herds for man's food. This study proposes the study of the biology of several kinds of hooved mammals namely the blackbuck, the nilgai antelope and the chital which are currently being raised in Texas with varying degrees of success. The studies of these animals on their native ranges is expected to yield information to guide their better management in the United States.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	5,000
	FY 1973 est.	10,000
	FY 1972	----
	FY 1971	2,000

	Institution	Title of Project
88.	University of California Davis, California	"Ecology and Behavior of Hoolock Gibbons"

The gibbon is unique among man-like apes in that he mates for life. He also has a strict, one-family territorial social organization. It now seems possible that this animal can change his social organization when the necessities of life require it. Specifically, when the trees lose their leaves and cease to provide food, it is believed that the gibbon will form larger groups made up of several families in order to forage for food. If this belief can be verified one of the missing links in the development of social organization from man's early primate ancestors to man's own communities of families will have been supplied.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	5,000
	FY 1973 est.	5,000
	FY 1972	----
	FY 1971	7,000

	Institution	Title of Project
89.	Harvard University, Cambridge Massachusetts and the National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"Ecological and Behavioral Studies of Rhesus Monkeys and Langurs"

These proposed studies will examine two problems of special interest to man's understanding of his own world. The rhesus monkey is the principal animal employed in medical research in the United States. They are cropped for this purpose in India. The study of this monkey will compare their condition in two neighboring states one in which they are being captured constantly for medical research and the other where this has never happened. The outcome should include valuable information on the management of the animal to ensure needed supplies for research. The langur inhabits the same areas that the rhesus monkeys do and their study together is an essential part of the ecology of these animals. The langur studies will focus on behavior, particularly on infanticide which has been observed periodically. Population and other forms of ecological pressure will be studied in seeking an explanation for this behavior.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	10,000
	FY 1973 est.	33,000
	FY 1972	----
	FY 1971	2,500

	Institution	Title of Project
90.	Office of Environmental Sciences Smithsonian Institution Washington, D.C.	"A Cooperative Program of Environmental Assessment"

As a result of a joint Indo-American Ecology Symposium held in New Delhi in February, 1971, plans for a major program of "environmental assessment" studies are underway. These studies will be carried out jointly by Indian and American scientists and institutions; they will be concerned with the exact quantitative measurement of important aspects of the natural environment. The basic scientific data expected to be developed by this program will not only contribute to the solution of environmental problems in developing India but will add vital data on the environment of use to American scientists and institutions working on U.S. environment problems. The priority problems to be attacked are now in the process of being identified. Budget requests in future years will include descriptions of concrete projects as they emerge under this developing program.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	20,000
	FY 1973 est.	30,000
	FY 1972	----
	FY 1971	30,000

	Institution	Title of Project
91.	Virginia Commonwealth University Richmond, Virginia	"Comparative Bioenergetics of the House Sparrow"

Because the common house sparrow is not only abundant but is found in most places in the world, this species provides the means to make comparative studies in "bioenergetics"--a basic aspect of ecology, which is concerned with what living things take from their environment in relation to what they give back to the environment, and the balances resulting when the intake and output of all kinds of living beings in a given environment are considered together.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	3,000
	FY 1973 est.	15,000

	Institution	Title of Project
92.	Smithsonian Tropical Research Institute, Smithsonian Institution Washington, D.C.	"Convergence at the Community Level: Nilgiri Sholas and California Oak-Madrone Woods"

This project aims to compare two very different--yet "strikingly similar"--types of forests, in India and California respectively. The result of the studies will tell us a great deal about what kinds of plants grow in what kinds of conditions, and about the processes which shape the development of forests. The study will also take into account the animal life dependent on these two particular forests.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	2,000
	FY 1973 est.	15,000

	Institution	Title of Project
93.	National Zoological Park Smithsonian Institution Washington, D.C.	"Comparative Studies of Elephants and Primates"

Smithsonian studies of the elephant and of three related monkeys, each inhabiting different zones of climate and altitude in Ceylon have provided basic information upon which plans to save the threatened elephant and to breed the monkeys for medical research can be based. These studies also provided the initial focus around which studies of the total environment proceeded including the restudy of the plants of Ceylon. These ecological and behavioral studies of the monkeys and the elephants provide a tested model for comparative studies of these animals in India.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	5,000
	FY 1973 est.	10,000
	FY 1972	----
	FY 1971	22,000

	Institution	Title of Project
94.	Smithsonian Tropical Research Institute, Smithsonian Institution Washington, D.C.	"Comparative Studies in Evolutionary Ecology in India"

One-half of mankind lives in the tropics. An understanding of the biology of the tropics is critical to the livelihood of this population. The Smithsonian Tropical Research Institute leads in the continuous study of this climatic zone and of ways to predict the effects of man's actions on that zone. The objective is to inform the planning of industry and governments in order to reverse the process of destruction of the environment and ensure an improving environment for mankind.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	2,000
	FY 1973 est.	10,000
	FY 1972	----
	FY 1971	3,000

	Institution	Title of Project
95.	National Museum of Natural Smithsonian Institution Washington, D.C.	"Systematics and Zoogeography of the Stomatopod Crustaceans of the Eastern Coasts of India"

Study of the seas to improve man's use of the food available there is among the few first priority scientific problems today. This study is an outgrowth of the International Indian Ocean Expedition to which the United States made a significant national contribution. Much of the material obtained in the cruises on the U.S. Research Vessel the ANTON BRUN has been returned to the Smithsonian where it is under study. Comparative studies of earlier collections are essential and this material is located primarily in Calcutta, India, with the Indian Zoological Survey.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	5,000
	FY 1973 est.	----
	FY 1972	4,000

	Institution	Title of Project
96.	University of Michigan Ann Arbor, Michigan	"Observations and Collections of Uropeltid Snakes"

The primary purpose of this project is to gather live uropeltid snakes for transport to the United States for studies which the Principal Investigator has been carrying out for the past twelve years here. Through collaboration with Indian herpetologists observations of the locometer, feeding, prey-catching and mate-recognition behavior of these reptiles will be conducted in their natural habitats in India.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	5,000
	FY 1973 est.	----
	FY 1972	5,000

	Institution	Title of Project
97.	Cornell University Ithaca, New York	"Plant Developmental and Anatomical Studies (Pteridophytes and Monocots)"

These studies arise from mutual interests of Cornell University and Sardar Patel University in India. Similar studies on the same types of plants in both America and India suggested the considerable scientific value of coordinating the studies and identifying common techniques and desired data.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	3,000

b. New Biology Projects in India

	Institution	Title of Project
98.	Texas A & M University College Station, Texas	"The Aerial Transport of Pathogenic Fungous Spores"

A major goal of the Government of India is to become self-sufficient in agriculture. The second most important agricultural crop in India is sorghum. The major cause of disease in sorghum is a fungus, sclerospora sorghi. This same fungus is present on sorghum acreages in Texas. This proposal, by Texas A & M and Andhra University in India, will study the conditions under which the fungus spores are spread, and from this knowledge it is hoped that effective disease control can be developed.

U.S. Dollar equivalent in Indian Rupees FY 1974 est. 10,000

	Institution	Title of Project
99.	University of Chicago Chicago, Illinois	"Trophic Strategies and resource utilization of ruminant and nonruminant ungulates in Kaziranga"

The Kaziranga Wildlife Sanctuary, located in the Indian State of Assam, supports at least nine species of wild ungulates (hooved animals) and two species of livestock. Among the endangered species is the Indian rhino for which Kaziranga is the major sanctuary. This proposal in collaboration with the College of Veterinary Science, Gauhati, India, will study the population frequency and eating habits of the animals in relation to the land available, with the goal of preserving the wildlife while still providing adequate grazing land for livestock.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 9,000
FY 1973 est. 9,000

	Institution	Title of Project
100.	Office of Environmental Sciences, Smithsonian Institution, Washington,D.C.	"Ecosystem Studies of Wildlife Sanctuaries as a Basis for Sound Wildlife Conservation Programs

A series of studies in India's Gir Forest of the lion, ungulates (hooved animals), the vegitation and of human encroachment, have resulted in recommendations concerning the management of the sanctuary designed to ensure that the wildlife, particularly the Asiatic lion, does not become extinct. It is proposed in collaboration with India's Forest Department to undertake similar studies in other national wildlife sanctuaries to provide a sound basis for conservation programs in each sanctuary.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 8,000

	Institution	Title of Project
101.	National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"Geographical Oceanography in the Gulf of Cambay"

As the population of the world continues to increase, more attention is being focused on the sea as a source of food. The Gulf of Cambay and the adjacent continental shelf, lying off the west coast of India, are subject to large deposits of river sediment during the monsoon season. The amount of sediment and where and at what rate it settles affects marine life. This study of sediment distribution during periods of heavy flooding, and the effects on marine life, particularly commercially valuable fishes, can have application for the United States where the east coast continental shelf has features similar to those of the continental shelf off the west coast of India.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	5,000
	FY 1973 est.	2,000

	Institution	Title of Project
102.	Office of Environmental Sciences, Smithsonian Institution, Washington D.C.	"Development of a Manual for Oceanographic Sorting Center"

Understanding life in the sea and how it can better serve mankind is still dependent on first finding out what is there. This work can be greatly accelerated by coordination and standardization of collecting and distributing specimens to the world's experts on the many kinds of marine plant and animal life. Oceanographic sorting centers have been established around the world to speed this study. A unanimous recommendation of the first international meeting of Directors of Oceanographic Sorting Centers, sponsored by the Smithsonian in May 1972, in Tunisia was that manuals be developed in order to ensure world wide standards of uniformity. Represented at this meeting were Directors from India, Japan, Tunisia, Mexico, Canada, Germany, the United States and UNESCO. Indian scientists, UNESCO and the Smithsonian propose to prepare and publish these manuals.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	7,000

	Institution	Title of Project
103.	University of Washington Seattle, Washington	"Endocrine Basis of Bird Migration"

What makes birds migrate is still little understood. It is proposed to study the physiological basis for this major cycle in the life of birds. American and Indian scientists plan to investigate changes in endocrine gland activity in order to determine whether and to what extent these changes are related to migratory patterns.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	5,000

	Institution	Title of Project
104.	Colorado State University Fort Collins, Colorado	"Workshop on Ecosystem Modeling"

Man's best use of grasslands is dependent on an understanding of grassland ecosystems. An expert at Colorado State has been invited to conduct research on Indian grasslands, at the conclusion of which there will be a workshop for the purpose of sharing the latest techniques that assist in determining balanced usage of grasslands.

U.S. Dollar Equivalent in Indian Rupees FY 1974 4,000

	Institution	Title of Project
105.	Texas Tech University Lubbock, Texas	"Anatomical and Ecological Study of the Indian Whistling Duck"

In the face of habitat changes caused by human encroachment some species of wildlife are able to adapt successfully while others have become extinct. Studies conducted by Texas Tech on the life cycle of whistling ducks in this country, as compared to anatomically nearly identical ducks in India, suggest that the Indian ducks have developed the ability to adapt to a more varied environment. Discovery of the reasons why a nearly identical bird species has different abilities to adapt may suggest ways in which an endangered species can be introduced, and have preserved, in a different environment. This proposal would be conducted in conjunction with the Bombay National History Society.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est 5,000

	Institution	Title of Project
106.	Office of Environmental Sciences, Smithsonian Institution, Washington,D.C.	"The Ecology of Food grains of Semi-Arid Lands"

A study to determine environmental factors affecting development of new strains of food grains characteristic of Semi-arid regions is proposed as a part of the genetic studies to develop these new strains already initiated by the World Bank, The United Nations Development Program and a group of aid sponsoring nations, including the United States at Hyderabad, India.

U.S. Dollar Equivalent in Indian Rupees FY 1974 5,000

	Institution	Title of Project
107.	Office of Environmental Sciences, Smithsonian Institution, Washington,D.C.	"Survey of the Wetlands of India"

Wetlands, mashes and swamps, are the breeding grounds of a vital portion of the earths animals of all kinds. Their preservation is essential to the existence of the living world of mankind. A survey to plan the conservation of India's threatened wetland is proposed.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 7,000

	Institution	Title of Project
108.	Office of Environmental Sciences, Smithsonian Institution, Washington,D.C.	"Establishment of a Marine Sorting Center at Porto Novo"

More information about the kinds and quantities of sea life is necessary if man is to utilize the full potential of the sea as a food resource. Marine Sorting Centers, are organized to gather and share data about marine life, are in operation in a number of countries around the world. This proposal, in cooperation with the Smithsonian and the Department of Marine Biology at Annamalai University, would set up such a center at Porto Novo to gather data on sea life in the Bay of Bengal.

U.S. Dollar Equivalent in Indian Rupees — FY 1974 est. 5,000
FY 1973 est. 5,000

	Institution	Title of Project
109.	The University of Kansas Lawrence, Kansas	"Niche Ecology of the Garden Lizard in the Gir Forest, India"

The Gir Wildlife Sanctuary, located in the Indian State of Gujerat and approximately 400 square mile in size, is the home of numerous species of wildlife. Modern wildlife preservation and management are dependent on an understanding of the relationships of the wildlife to the land available. Past studies of the Gir have included research on many of the mammal and bird species present as well as as the vegetation. This study by the Bombay Natural History Society and the University of Kansas will provide data on one of the more numerous species present in the Gir but about which little is currently known, the garden lizard, Calotes versicolor.

U.S. Dollar Equivalent in Indian Rupees — FY 1974 est. 3,000

	Institution	Title of Project
110.	Office of Environmental Studies, Smithsonian Institution, Washington, D.C.	"Limnology of the Ganges River"

The Ganges is the major river system of north India, with headwaters reaching to the Himalay as in the north, and the central highlands in the south. The Ganges plain alone covers nearly a quarter of India's land area and is the home of some 135,000,000 people, all of whom are directly or indirectly dependent on the river waters for their livelihood. As with many of the major river systems around the world, water pollution is a major problem. Determining the causes and amounts of pollution will provide important data that will make possible effective pollution control programs. An important economic benefit resulting from cleaner waters would be an increase in fisheries, potentially a valuable food resource. German and American biologists would work closely with Indian scientists representing a number of Indian research institutes and universities.

U.S. Dollar Equivalent in Indian Rupees — FY 1974 est. 6,000
FY 1973 est. 5,000

IV. ISRAEL

a. On-Going and Pending Biology Projects in Israel

	Institution	Title of Project
111.	Office of Environmental Sciences, Smithsonian Institution, Washington D.C.	"Biota of the Red Sea and Eastern Mediterranean"

This project nearly completed in Israel is studying the changes of marine life in the Mediterranean and Red Seas resulting from the movement of fish and other organisms through the sea-level Suez Canal. Such studies help understand changes which might result from construction of a sea-level canal through the isthmus of Panama.

U.S. Dollar Equivalent in Israeli Pounds		
	FY 1972	78,000
	FY 1971	95,000
	FY 1970	120,000
	FY 1969	133,000
	FY 1967	122,000

	Institution	Title of Project
112.	State University of New York Stony Brook, New York	"A Living Coral Reef at Eilat"

This study at Eilat, Israel, also nearing completion, is providing a firm data base for computer analyses of the coral species and the related plants and animals, much as forests are studied. The coral are roughly equivalent to the trees in a forest providing a basic biological structure. The fish are roughly equivalent to the birds and so on, with sea animals and plants finding niches in the reef just as would insects, snails, moss and the like thrive in a forest.

U.S. Dollar Equivalent in Israeli Pounds		
	FY 1972	7,000
	FY 1971	51,000
	FY 1970	7,000
	FY 1968	12,000

V. MOROCCO

a. On-Going and Pending Biology Projects in Morocco

	Institution	Title of Project
113.	National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"A Geographical and Ecological Study of the Mammals of Morocco"

This project continues studies in the arid lands of Morocco of rats, mice and other rodents in order better to understand and control these animals of great importance to man. The animals need study because they befoul stored food, consume a substantial part of agricultural crops and serve as a reservoir of disease.

U.S. Dollar Equivalent in Moroccan Dirhams	FY 1973	16,000
	FY 1972	63,500
	FY 1971	92,000
	FY 1970	67,000

	Institution	Title of Project
114.	Duke University Durham, North Carolina	"Studies of Ramalina Lichens in Morocco"

The study of the mechanisms employed by plants and animals in adapting to their special places in the ecosystem is an essential part of learning to manage nature's production. This study proposes to identify the different kinds of fungus growing at different altitudes and in different temperature and moisture zones by studying the chemicals produced by fungi in these differing circumstances.

U.S. Dollar Equivalent in Moroccan Dirhams	FY 1972	5,000
	FY 1971	3,000

	Institution	Title of Project
115.	University of California Berkeley, California	"Biosystematic Studies in Moroccan Flora"

Basic to any study of the management of the landscape is a modern identification and description of plant life. Such studies are essential for each national program of resource management. They are greatly needed in Morocco. The results can also be expected to contribute to an understanding of the plant life of all arid regions including those in the United States.

U.S. Dollar Equivalent in Moroccan Dirhams	FY 1972	2,000
	FY 1971	5,000

VI. PAKISTAN

a. On-Going and Pending Biology Projects in Pakistan

	Institution	Title of Project
116.	University of Washington Seattle, Washington	"Research on the Biology and Control of the Wild Boar in Pakistan

The wild boar causes crop damage in Pakistan alone estimated at $35,000,000 annually. Its control has been of concern to the Pakistani government, as it is to the other countries stretching from India to Europe. In Muslim countries the boar is considered, like the pig, an unclean animal and its numbers are not, therefore, controlled through regular cropping. The proposed study will provide basic biological information and information on the behavior and feeding habits of the boar upon which a program of control can be based. One result might be greater agricultural self-sufficiency in Pakistan.

U.S. Dollar Equivalent in Pakistani Rupees	FY 1974 est.	35,000
	FY 1973 est.	35,000
	FY 1972	----
	FY 1971	38,000

	Institution	Title of Project
117.	National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"Taxonomic Studies of the Marine Fauna of Pakistan's Continental Shelf"

The Arabian Sea is known from commerical fishing catches to be potentially highly productive. Very little is known about this sea, however, particularly about the northeastern portion off Pakistan and the mouth of the Indus River. This proposal seeks to study the continental shelf, to learn what is there, how it is distributed and in what quantities.

U.S. Dollar Equivalent in Pakistani Rupees	FY 1974 est.	50,000

b. New Biology Projects in Pakistan

	Institution	Title of Project
118.	Texas A & M University College Station, Texas	"Introduction of Blackbuck Antelope As a Game Animal"

The Department of Wildlife at Texas A & M has worked for a number of years in establishing and harvesting the blackbuck antelope on Texas ranges. This antelope once was plentiful in its native Pakistan but has become extinct. Recently a small herd of blackbucks was reintroduced and placed in a game preserve in Pakistan. This study by Texas A & M, in cooperation with the Gov't. of Pakistan and the World Wildlife Fund would seek to determine what is essential to survival of the blackbuck in Pakistan and thereby to what additional areas the antelope could be introduced. If this program is successful on a large scale, Pakistan would be provided with an important additional source of high protein food.

U.S. Dollar Equivalent in Pakistan Rupees FY 1974 est. 60,000

	Institution	Title of Project
119.	University of California Davis, California	"Survey of Vegetation and Wildlife for Preservation in Proposed National Park System"

The International Union for the conservation of Nature and Natural Resources (I.U.C.N.) has identified some twenty species of endangered wildlife in Pakistan. Preservation of wildlife is dependent on a knowledge of the animals habitats. Several Pakistani institutions, including the Sind Wildlife Management Board and the Pakistan Zoological Survey would join the Institute of Ecology of the University of California at Davis in a study to determine the relationship of the endangered wildlife species to their respective habitats so that the planned National Park system will be sufficiently inclusive to provide sanctuaries for all endangered species.

U.S. Dollar Equivalent in Pakistan Rupees FY 1974 est. 30,000
FY 1973 est. 63,000

	Institution	Title of Project
120.	Utah State University Logan, Utah	"A Survey of the Wild Sheep and Goat Population"

Utah State has had extensive experience in working with the management and conservation of wildlife in semi-arid lands, both in this country and overseas. This study, in cooperation with appropiate Pakistani wildlife organizations, would become an extension of a wild sheep survey already underway in Iran. Hoped for economic benefits include tourist development, and game ranching to provide additional sources of protein.

U.S. Dollar Equivalent in Pakistan Rupees FY 1974 est. 50,000
FY 1973 est. 10,000

	Institution	Title of Project
121.	Office of Environmental Sciences, Smithsonian Institution, Washington, D.C.	"Life Cycles of Fish Parasites in Tropical Lakes"

Many species of fish, an important source of food, are found in tropical lakes. The size of the catch is often limited due to high attrition caused by fish parasites. An essential step in the life cycle of certain parasites occurs when infected fish are eaten by water birds, with the parasites then developing in the host birds until later return to the water where the cycle again begins. This project, sponsored by the Zoological Survey of Pakistan and the Smithsonian would study the interrelationship of the parasites, birds and fish. Successful interruption of the parasites life cycle would lead to an increase in fish production.

U.S. Dollar Equivalent in Pakistan Rupees FY 1974 est. 20,000

	Institution	Title of Project
122.	Howard University Washington, D.C.	"Search for New Sites of Cenozoic Mammals in Pakistan"

Knowledge of the evolution of mammals on the Indian subcontinent is still quite limited since many of the early fossil specimens were collected prior to the introduction of modern stratigraphic dating techniques. This study would initially seek to locate rock formations containing fossils representing the evolution and distribution of mammals. Identification, dating, and placement of specimen in chronological sequence would be done in cooperation with the Geological Survey of Pakistan and the University of Islamabad.

U.S. Dollar Equivalent in Pakistan Rupees FY 1974 est. 19,000

VII. POLAND

a. On-Going and Pending Biology Projects in Poland

	Institution	Title of Project
123.	University of Georgia Athens, Georgia	"Interaction of Small Rodents with Human Beings"

The University of Georgia has been a leader in the developing science of ecology and has innovated techniques of studying living things and their relationships. This project will suppliement an earlier grant, completed in 1972, which studied rats, mice and other rodents in a number of different situations in the temperate climate of Poland, with one likely by-product the better control of rats. This new study carries the earlier one an essential step forward with the study of the interrelations of rodents and man.

U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	25,000

	Institution	Title of Project
124.	Queen's College City University of New York	"Museum Studies of Unique Specimens of Fossil Mammals"

Man can better understand how to manage his own world, if he understands how he reached his present condition. This study proposes to investigate one of the critical stages in the evolution of man by studying the changes in the ear region of the fossil skulls of reptiles and mammals which lived at the time when mammals were evolving out of their reptile ancestors.

U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	3,000
	FY 1973	----
	FY 1972	2,000
	FY 1971	2,000

	Institution	Title of Project
125.	Oak Ridge National Laboratory Oak Ridge, Tennessee	"Temperate Zone Forests and Grassland Ecosystems"

As part of the International Biological Program (IBP) worldwide network of studies of the natural environment, the present studies would seek to determine energy and productivity in a temperate zone forest ecosystem, as is being done in other projects in a tropical setting. This project will be carried out in cooperation with Polish scientific investigators.

U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	75,000
	FY 1973 est.	35,000

	Institution	Title of Project
126.	Smithsonian Tropical Research Institute, Balboa, Canal Zone Panama	"Ecology of Small Animals of Tropical Grasslands"

Optimal use of tropical grasslands, just as with other types of vegetation cover, depends on the proper balance of plant, animal and insect life. The role small mammals play in maintaining this balance in Panamanian grasslands is the purpose of this joint study by the Polish Institute of Ecology and the Smithsonians Tropical

Research Institute. Later studies are planned to determine the roles played by plants and insects in grassland ecosystems. The studies, when completed, can provide information on which plans can be made for possible alternative uses of the grasslands, whether as wildlife preserves, grazing areas for livestock, development as croplands, or other possible combinations.

U.S. Dollar Equivalent in Polish Zloties — FY 1974 est. 35,000; FY 1973 est. 10,000

	Institution	Title of Project
127.	The Academy of Natural Sciences, Philadelphia, Penn.	"A Biochemical Investigation of Rana esculenta, a Bisexual frog of possible hybrid origin"

Taxonomy is the classification of plants and animals according to their similarity or dissimilarity to related species. Recent advances in understanding the making of enzymes and proteins have provided scientists with another valuable tool in the accurate classification of living things. Opinion has differed for some time as to whether Rana esculenta is a hybrid or a separate species of frog. This study, in cooperation with the Zoological Institute in Poznan, will not only attempt to properly classify this frog by enzyme and protein analysis, but will provide the opportunity for Polish and American scientists to share the latest techniques in species identification.

U.S. Dollar Equivalent in Polish Zloties — FY 1974 est 6,000

	Institution	Title of Project
128.	National Museum of Natural History, Smithsonian Institution Washington, D.C.	"Publication Preparations for Research on Paleozoic Graptolites"

Paleontoloy, the study of fossil remains, has provided scientists with much of what is know about the evolution and development of plank and animal life. Graptolites are extinct marine animals which form an important link in the evolutionary process of marine life. Recently scientists at the University of Warsaw and the Smithsonian Institution have done collaborative research on these fossils, and following an analysis of their separate and joint findings will publish a manuscript supplementing an earlier article which appeared in Nature magazine.

U.S. Dollar Equivalent in Polish Zloties — FY 1973 1,000

	Institution	Title of Project
129.	Duke University Marine Laboratory Beaufort, North Carolina	"The Role of Environmental Factors in Modifying the Effect of Pollutants on Larval Development of Marine Brachyura"

A major concern of marine biologists is the adverse affect of pollutants on marine life. Various pesticides and insecticides when found in high concentrations near marine estuaries have been responsible for the deaths of large numbers of commercial shrimps and crabs. Further studies are planned in which crabs will be raised under laboratory conditions, introducing controlled amounts of known pollutants in order to determine at what level the crabs are adversely

affected. This project would bring two Polish marine biologists from the University of Gdansk to Duke University for a period of four months in order to study the latest U.S. techniques, and thus lay the foundation for a cooperative research program between the two institutions.

U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	15,000
	FY 1973 est	14,000

VIII. TUNISIA

a. On-Going and Pending Biology Projects in Tunisia

	Institution	Title of Project
130.	National Museum of Natural History, Smithsonian Institution	"Studies on Systematics and Physiological Ecology of Tunisian Sponge Communities"

Important traditionally as a "crop" from the sea, sponge communities are equally important in terms of their relationships with other organisms that live in the sea. This study concentrates on a sponge community off the Tunisian coast, and focuses on the organisms involved and the principal physical factors which influence their morphological appearance and their distribution. The field work is a substantially complete on this project and a publication is in preparation.

U.S. Dollar Equivalent in Tunisian Dinars		
	FY 1974 est.	10,000
	FY 1973	----
	FY 1972	----
	FY 1971	44,000
	FY 1970	21,000

	Institution	Title of Project
131.	American University of Beirut, Lebanon (Incorporated in New York State)	"Zoogeography and Community Structure of Sand-Beach Meiofauna of the Mediterranean Region"

Meiofauna are microscopic animals which live in the water. Though minute, they are important as among the ultimate links in the "food chain" upon which all life, including that of man, ultimately depends. Little is known about these animals. This study in the Mediterranean region will have application to other areas.

U.S. Dollar Equivalent in Tunisian Dinars		
	FY 1974 est.	10,000
	FY 1973	----
	FY 1972	10,000
	FY 1971	9,000

	Institution	Title of Project
132.	Office of Environmental Sciences, Smithsonian Institution, Washington D.C.	"Support for the Mediterranean Marine Sorting Center, a Facility for Processing Marine Organisms"

This facility was established, and operates, in cooperation with both the Smithsonian Oceanographic Sorting Center in Washington, D.C., and with the local Tunisian Institute of Oceanography and Fisheries. Its function is to speed the description of the fish and other organisms of the Mediterranean Sea and the accumulation of information about where they occur and their feeding habits through sorting in Tunisia of the scientific collections of the countries of the region and distribution of specimens by species to specialists around the world for study.

U.S. Dollar Equivalent in Tunisian Dinars	FY 1974 est.	190,000
	FY 1973 est.	201,000
	FY 1972	198,600
	FY 1970	477,000
	FY 1969	216,000
	FY 1967	150,000

	Institution	Title of Project
133.	Utah State University Logan, Utah	"Systems Analysis of the Pre-Saharan Ecosystem of Southern Tunisia"

This project is completely coordinated with the U.S. Desert Biome program of the United States National Committee for the International Biological Program, and aims to accomplish on the edge of the Sahara Desert what the USIBP studies are attempting in our own Western deserts, namely, information about what makes a desert a desert, whether the desert is advancing or contracting, whether its ecology is dyamic or stable, and similar questions. In answering these questions the most sophisticated of modern tools, including comput r analysis of models developed, are employed. The present study will have considerable comparative value since it will be done along the same lines and employing the same methodologies as the Desert Biome studies in this country. The Tunisian Department of Agriculture is cooperating with this study, and awaiting its results as bearing upon its management and reclamation of desert lands.

U.S. Dollar Equivalent in Tunisian Dinars	FY 1974 est.	50,000
	FY 1973 est.	64,000
	FY 1972	98,000
	FY 1971	4,000

	Institution	Title of Project
134.	Office of Environmental Sciences, Smithsonian Institution, Washington, D.C.	"Pollution Studies in Lake Tunis"

The Lake of Tunis is a unique tropical lagoon which has served as a dump for sewage for some 2000 years ever since the ancient city of Carthage flourished on its shores. It is an extraordinarily productive lake and sustains a substantial commerical fishery. It is at the same time the bane of residents of Tunis. Its stench which persists throughout the year, increases to disturbing proportions in the fall of each year when the oxygen level of the lake drops killing the fish which wash ashore in masses. It drives Tunisians away from the lake and discourages tourism which is one prime source of hard currency for the developing Tunisian economy. A study of the lake will provide information on a unique biological process and the basis for a plan to reduce the stench and the fish kill.

U.S. Dollar Equivalent in Tunisian Dinars	Fy 1974 est.	10,000

	Institution	Title of Project
135.	National Museum of Natural History, Smithsonian Institution, Washington, D.C.	"Marine Decapod Crustaceans of North Africa"

The marine decapod crustaceans include shrimps, crabs, and lobsters and comprise more than 8000 species; they are thus commercially important marine animals and a knowledge of their biology and habits is thus useful. The aim of the present study is to produce a reference volume of the decapods of the North African coast which can be used by students, scientists, or fishermen; no such reference volume exists for decapods in this region. The comprehensive baseline collections made for this study will provide a foundation for future studies on other aspects of the biology of decapods as well as for future studies on environmental change, effects of pollution, and on the migration of marine animals in the area.

U.S. Dollar Equivalent in Tunisian Dinars		
	FY 1974 est.	20,000
	FY 1973 est.	5,000
	FY 1972	50,000

	Institution	Title of Project
136.	University of Arizona Tucson, Arizona	"Population Biology and Cytogenetics of Desert Mammals"

In recent years there has been an increasing awareness of the importance of knowing more about our environment and the role played by plants and animals in the maintenance of that environment. This project, in cooperation with the Tunisian Association for the Protection of Nature and Environment is studying the genetic make up and population frequency of desert mammals. A better understanding of the role played by mammals in a desert ecoystem can provide information required to maintain the proper balance of plant and animal life. It may also be possible to suggest under what condition desert areas could be utilized as croplands or for the grazing of livestock.

U.S. Dollar Equivalent in Tunisian Dinars		
	FY 1974 est.	20,000
	FY 1973 est.	30,000

	Institution	Title of Project
137.	University of Colorado Boulder, Colorado	"Late Tertiory Biochronology of Mammalian Faunas in the Western Mediterranean Area"

Much of what is known about the evolution and development of plants and animals has come from the study of fossils. Past research carried out in Tunisia by the University of Colorado has identified the fossil remains of large numbers of mammals and other vertebrates. The purpose of this study, in cooperation with Tunisian scientists is to determine the age and chronological appearance of mammal species, based upon the known age of the rocks in which the fossils are located. Present evidence suggests that the age and diversity of Tunisian rock formations are such as to provide the key to understanding the evolution of mammals for all of North Africa.

U.S. Dollar Equivalent in Tunisian Dinars		
	FY 1974 est.	12,000

b. New Biology Projects in Tunisia

	Institution	Title of Project
138.	University of Michigan Ann Arbor, Michigan	"Systematic Studies of African Mollusks"

Snails are known carriers of diseases such as schistosomiasis and liver flukes which attack both man and domesticated animals. The University of Michigan has conducted extensive research on the biology and genetics of India snails and now proposes to conduct similar studies in North Africa. From this study it is hoped to develop mechanisms for the control of snail populations based on utilization of the snails natural enemies, rather than with chemical pesticides which often have unwanted secondary effects in destroying birds and fish.

U.S. Dollar Equivalent in Tunisian Dinars		
	FY 1974 est.	5,000
	FY 1973 est.	1,000

IX. YUGOSLAVIA

a. On-Going and Pending Biology Projects in Yugoslavia

	Institution	Title of Project
139.	University of Colorado Boulder, Colorado	"Cooperative Studies on the Cytotaxonomy of Yugoslavian Flora"

The plants of Yugoslavia are varied because of the combination of tropical alpine and plains varities which have taken root in its varied terrain. They are partially identified by means of the classic descriptive method, but little studied from the point of view of modern chromosome and chemical analysis. Such studies will not only contribute to the management of the plant life of Yugoslavia, but they will provide insights into the process of development of new strains of plants and of evolution itself.

U.S. Dollar Equivalent in Yugoslav Dinars	FY 1974 est.	55,000
	FY 1973	50,000
	FY 1972	58,000
	FY 1971	51,000

	Institution	Title of Project
140.	University of Illinois at Chicago Circle, Chicago, Illinois	"Evolutionary Relationships Among Upper Cretaceous Teleostean Fishes"

Most of the fish living today have evolved from fish which appeared first in the Cretaceous period, 120 million years ago. The complex process of identifying today's fish can be simplified by proper identification of their ancestors. This identification is the essential first step toward an understanding of the ecology of the seas and toward ensuring proper management of the resources of the seas.

U.S. Dollar Equivalent in Yugoslav Dinars	FY 1972	15,000

	Institution	Title of Project
141.	University of California at Los Angeles, Los Angeles, California	"Comparative Population Dynamics of Competitively Exclusive Lizard Species"

This study aims to show how a more vigorous and adaptable species of lizards can gradually colonize and displace a less hardy species. The study will thus throw a light on the actual mechanisms of evolution.

U.S. Dollar Equivalent in Yugoslav Dinars	FY 1974 est.	15,000

	Institution	Title of Project
142.	Office of Environmental Sciences, Smithsonian Institution, Washington,D.C.	"Cooperative Marine Research aboard the Smithsonian Research Vessel R/V Phykos"

Man's dependence on the seas for food and mineral resources is increasing as the world's population continues to grow. Oceanographic studies of a sea the size of the Mediterranean can provide useful information on the processes of life in all seas. Numerous U.S. research institutions and universities have indicated an interest in utilizing the Phykos as a research vessel in order to conduct research in such areas as: the shape and make-up of the sea floor and how this effects ocean currents; the collection and distribution of plankton, one-celled plants and animals that form the food-base of sea life; the distribution of man-made and natural pollutants and their affect on marine life; and the drilling of caves beneath the ocean floor in order to determine through fossils the evolution and distribution of marine life. Because of the abrupt reduction of United States holdings of Yugoslav dinars, the Institution is seeking alternative sources of funding for the research cruises of the Phykos.

U.S. Dollar Equivalent in Yugoslav Dinars	
FY 1974 est.	26,000
FY 1973 est.	25,000
FY 1972	41,000
FY 1971	232,000
FY 1970	40,000

	Institution	Title of Project
143.	Dartmouth College Hanover, New Hampshire	"Studies of the Ecology of Lake Ohrid and its Drainage Basin"

This study is examining the complex relationships among the activities of man, the animals, plants and fish as well as the geology of the drainage basin of Lake Ohrid in southern Yugoslavia. The lake has already been the site of basic descriptive studies of the fish and their evolution by the father of Yugoslav ecology Professor S. Stankovic, providing a firm base for studies leading to better management of man's environment.

U.S. Dollar Equivalent in Yugoslav Dinars	
FY 1974 est.	178,000
FY 1973 est.	200,000
FY 1972	335,000

	Institution	Title of Project
144.	Office of Environmental Sciences, Smithsonian Institution, Washington D.C.	"A Cooperative Program in Environmental Management at Lake Skadar"

An aluminum plant is planned for construction in the drainage basin of Lake Skadar. A drainage tunnel is proposed to carry waters from the lake to the Adriatic Sea. Tourism is expanding and sport fishing is taking ever larger numbers of fish from the lake. Basic studies are underway on the current biological status of the lake as well as studies to monitor the impact of these man-made "disturbances" on the health of the area.

U.S. Dollar Equivalent in Yugoslav Dinars	
FY 1974 est.	210,000
FY 1973 est.	214,000
FY 1972	326,000

	Institution	Title of Project
145.	Duke University Durham, North Carolina	"Conference on Larval Forms"

In studying many animals, particularly marine animals, it is not possible to limit investigations to adult forms of the animals owing to the fact that many animals pass through several stages in their life cycles, often markedly different. This conference aims to bring together specialists in larval forms of certain marine animals in order to compare knowledge and techniques. Publishable proceedings are expected to result.

U.S. Dollar Equivalent in Yugoslav Dinars FY 1974 est. 30,000

	Institution	Title of Project
146.	University of Michigan Ann Arbor, Michigan	"Interspecific Competition and Communication in Intertidal Hermit Crabs"

One of the insights of modern biology has been that species often compete for the same food and dwelling space. The species which excells at this sort of competition is likely to displace the species which is less efficient in this respect; this is one of the principal mechanisms of evolution. The study aims to document a particular instance of this competition between species in nature, in this case, two species of hermit crabs in Yugoslav waters. The study has not only theoretical implications for a better understanding of organic evolution, but will document the biology and distribution of the crabs being studied.

U.S. Dollar Equivalent in Yugoslav Dinars FY 1974 est. 5,000

b. New Biology Projects in Yugoslavia

	Institution	Title of Project
147.	National Museum of Natural History, Smithsonian, Instutution, Washington, D.C.	"International Symposium on the Biology of Cephalopoda"

Cephalopods are a class of mollusks that include cuttlefishes, squids, and Octopuses. In many regions of the world they are highly valued by man as a food source and additionally, form an important part of the diet for other varieties of marine life, including tuna, billfish, whales and seals. This symposium, to be sponsored jointly by the Yugoslav Institute of Marine Biology and the Smithsonian, would bring together cephalopod experts from some twenty countries. Benefits to be gained include initiating research which will further understanding of the key role played by cephalopods in the total food chain of the sea, and the development of illustrated manuals which will make possible rapid and accurate classification of the nearly 600 species of cephalopods.

U.S. Dollar Equivalent in Yugoslav Dinars FY 1974 est. 51,000

X. MULTI-COUNTRY BIOLOGY PROJECTS

a. On-Going and Pending Multi-Country Biology Projects

	Institution	Title of Project
148.	Library, Smithsonian Institution, Washington D.C.	"Translation and Publications of Reference Works and Monographs Through the National Science Foundation's Translation Program"

The science of other nations is frequently locked out of reach of United States' scholars because research results appear only in a foreign language. Wasteful duplication often results and the insights of others are simply not available. Translation on a continuing basis of works appearing in other languages is therefore essential. Particularly important, for example, is the translation of the Flora of the USSR which can be of direct importance to a similar study in North America because the plants of the regions around the North Pole are similar. The Smithsonian is able to contract for the translation of essential scientific works in one of the "excess currency" countries through a transfer of foreign currencies to the regular National Science Foundation scientific translation program.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	2,000
	FY 1973	----
	FY 1972	----
	FY 1971	10,000
	FY 1970	5,000
U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	10,000
	FY 1973 est.	10,000
	FY 1972	----
	FY 1970	10,000
U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est.	10,000
	FY 1973 est.	10,000
U.S. Dollar Equivalent in Tunisian Dinars	FY 1974 est.	5,000

	Institution	Title of Project
149.	U.S. National Committee for the International Biological Program, National Academy of Sciences Washington, D.C.	"USIBP Training, Symposia, and Research Development in the 'Excess Currency' Countries"

The International Biological Program seeks to promote the study of nature's productive process particularly by focussing talent and money on problems which can not readily be studied in any one nation. The U.S. contribution is a series of complex studies of entire climatic regions like temperate forests and grasslands or tropical forests or deserts. Studies initiated in the U.S. are of substantially greater value if they can be compared with carefully prepared parallel studies in other parts of the world. Smithsonian

PL-480 funds have contributed to the development of a number of such parallel studies. The first such study is at present under review by the Smithsonian's Foreign Currency Program. It is called "Systems Analysis of the Pre-Saharan Ecosystem of Southern Tunisia" and is comparable to the desert studies being pursued in the U.S.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	2,000
	FY 1973 est.	10,000
	FY 1972	9,000
	FY 1971	10,000
U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	41,000
	FY 1973 est.	20,000
	FY 1972	4,000
	FY 1971	10,000
U.S. Dollar Equivalent in Yugoslav Dinars	FY 1974 est.	30,000
	FY 1973 est.	30,000
	FY 1972	2,000
	FY 1971	10,000
U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est.	4,000
	FY 1973 est.	2,000
U.S. Dollar Equivalent in Tunisian Dinars	FY 1974 est.	4,000
	FY 1973 est.	2,000

C. ASTROPHYSICS AND EARTH SCIENCES

I. EGYPT

a. On-Going and Pending Astrophysics and Earth Sciences Project in Egypt

	Institution	Title of Project
150.	Smithsonian Astrophysical Observatory, Cambridge, Massachusetts	"Research in Theories of Planetary Motion"

This project involves the use of computer facilities already existing in Egypt to test a theory which may better explain the movements of the planets in our solar system, including the motion of the earth. This is a cooperative venture between American and Egyptian scientific investigators.

U.S. Dollar Equivalent in Egyptian Pounds	FY 1972	39,000
	FY 1971	24,000

	Institution	Title of Project
151.	University of Pennsylvania, Philadelphia, Pennsylvania	"Libyan Desert Glass Occurrence"

Tektite, or natural "glass", occurs many places in the world, and theories vary whether the origin of this glass comes from impact, fusion at high temperatures, volcanic action, or even from an extraterrestrial source such as meteorites. In one of the most remote areas on the face of the earth--the region near the borders of Egypt, Libya, and the Sudan--tektites are strewn over a broad region. This project, in cooperation with the Egyptian Geological Survey, will pay one or several visits to the area, as needed, in an attempt to establish the nature and origin of this Libyan Desert "glass".

U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est.	50,000
	FY 1973 est.	----
	FY 1972	71,000

b. New Astrophysics and Earth Sciences Projects in Egypt

None.

II. INDIA

a. On-Going and Pending Astrophysical and Earth Sciences Projects in India

	Instutution	Title of Project
152.	Harvard University and Smithsonian Astrophysical Observatory Cambridge, Massachusetts	"Thermal Emission and Absorption of Diatomic Molecules"

This study aims to determine the physical constituents of late-type stars. By reproducing in the laboratory what they think is happening on the star, and observing the corresponding lines in the spectrum produced by each type of molecule, astronomers are then able to confirm the existence of given molecules by looking at the spectrum produced by the star in nature. Diatomic molecules are molecules consisting of two atoms. Some of the chemical elements common on the earth are composed of this type of molecule.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	11,000
	FY 1973	15,000

	Institution	Title of Project
153.	Smithsonian Astrophysical Observatory Cambridge, Massachusetts	"Studies in Geodesy, Geophysics, and Celestial Mechanics at the Naini Tal Observing Station"

This project is intended to continue, using foreign currencies, a program of cooperation between the Smithsonian Astrophysical Observatory and the Naini Tal Observing Station in India that has gone on since 1958. Naini Tal has served as one of SAO's global network of stations tracking satellites for NASA. The SAO tracking effort has already resulted, for example, in data which provide a mathematical description of this planet's deviations from a perfect sphere as well as much of what is known of atmospheric densities above 200 km.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	90,000
	FY 1973 est.	80,000
	FY 1972	----
	FY 1971	2,000

	Institution	Title of Project
154.	University of Hawaii Honolulu, Hawaii	"Gravity Studies in India"

Studies of the force of gravity in various parts of the earth show variations. Measurement of these variations makes possible interpretation of the composition and density of the materials beneath the surface of the earth, and are thus an important element in the exploration for oil and minerals. These explorations are especially important in a developing country such as India. In addition, India is an area where data are deficient which would contribute to the world-wide tabulation of data on the solid-earth environment. The data to be collected during this study would help to fill important gaps in global gravity data.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	20,000
	FY 1973 est.	25,000
	FY 1972	----
	FY 1971	2,000

	Institution	Title of Project
155.	Smithsonian Astrophysical Observatory, Cambridge, Massachusetts	"Atmospheric Measurements Through Radio Tropospheric Scatter Techniques"

The Troposphere is a layer of the earth's atmosphere below the stratosphere, about 7 to 10 miles above the surface of the earth, where temperature decreases rapidly with altitude. In this study, radio signals will be sent between two different points in India; as these signals pass through the troposphere its properties will become better understood by its effects on the radio waves. This study will yield data on how the troposphere refracts (or bends) the waves, on atmospheric layer formation, and on wind speeds at these levels. This data can result in significant improvement of the operation of the Smithsonian Astrophysical Observatory's Satellite Tracking System.

U.S. Dollar Equivlaent in Indian Rupees		
	FY 1974 est.	20,000
	FY 1973 est.	25,000
	FY 1972	19,000
	FY 1971	1,500

	Institution	Title of Project
156.	University of California San Diego, California	"The Effects on Cosmic Rays on Terrestrial and Extra-Terrestrial Materials"

In the atomic age the effects of radioactivity have become well known; the rate at which radioactive materials change into inert, stable materials can be measured, and hence the amount of stable material in a given substance provides information about its age--how long it has taken the radioactive material to change into inert material at the known rate of change. This study aims to look at radiation effects in substances both from outside the earth's atmosphere (meteorites) and those recovered from the earth (geological and archeological specimens) in an effort both to determine other effects of radiation. The kinds of analysis contemplated are similar to many of the studies which have been made of lunar samples brought back to the earth by the American Astronauts.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	8,000
	FY 1973 est.	4,000

	Institution	Title of Project
157.	Harvard University Cambridge, Massachusetts	"Studies of the Excitation Processes in Stellar, Planetary and Cometary Atmospheres"

The processes which produce "excitation," or release of energy, provide important information about the processes going on in the atmospheres of stars, planets, and comets. This is a laboratory study which will simulate processes believed to be taking place in different celestial atmospheres; the results obtained can then be compared with what is actually happening in nature.

U.S. Dollar Equivalent in Indian Rupees		
	FY 1974 est.	42,000

	Institution	Title of Project
158.	Iowa State University Ames, Iowa	"Stratigraphy and Geology of Siwalik Deposits"

The Siwalik hills of Northwest India are famous for their fossil-bearing beds. Some of the major discoveries of modern paleontology have come from these fossil-bearing strata. The present project aims to increase our knowledge of the stratigraphy and geology of these hills. The Principal Investigator has had experience, having served as a staff geologist on a Yale University expedition which discovered major primate fossils in the Siwalik Hills several years ago.

U.S. Dollar Equivalent in Indian Rupees — FY 1974 est. 30,000

b. New Astrophysics and Earth Sciences Projects in India

	Institution	Title of Project
159.	Smithsonian Astrophysical Observatory Cambridge, Massachusetts	"Design of a Mosaic Telescope"

Nearly all observational astronomers feel a strong need for increased light-gathering power, which can be obtained by using larger telescopes. Very large telescopes are extremely expensive, however, and the problems of constructing large mirrors are immense. It is, therefore, proposed to experiment with designs for a telescope consisting of many small mirrors. This study, in cooperation with Allahabad University, will complement the studies being performed on the Smithsonian Astrophysical Observatory's Multiple-Mirror Telescope.

U.S. Dollar Equivalent in Indian Rupees — FY 1974 est. 83,000
FY 1973 est. 190,000

	Institution	Title of Project
160.	Smithsonian Astrophysical Observatory Cambridge, Massachusetts	"Measurement of the Relative Energy of Cosmic Rays and Their Effects at Varying Depths Underground"

High energy particles from outer space cosmic rays produce secondary particles called mesons when those from outer space strike the Earth's atmosphere or the Earth itself. Both particles are capable of their own effects and of penetrating the Earth to varying debths depending on their energy. It is proposed to count the particles penetrating as deep as 8000 meters into the Earth's surface by monitoring counters placed in the deepest gold mine in India and to compare the numbers and kinds of particles reaching this depth with the numbers and kinds recorded at other depths.

U.S. Dollar Equivalent in Indian Rupees — FY 1974 est. 10,000
FY 1973 est. 35,000

	Institution	Title of Project
161.	Wesleyan University Middletown, Connecticut	"World-Wide Historical Survey of the History of Work in the Physics of the Ionosphere"

The history of science is a relatively new branch of both historical and scientific studies. Language and political barriers have prevented full understanding of the origins, directions and progress of work in other nations. This proposal to examine past research

in other nations into the nature of one of the upper layers of the Earth's atmosphere might help eliminate duplication in such studies, coordinate current activities and uncover neglected but potentially fruitful lines of research.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 5,000

	Institution	Title of Project
162.	Oregon State University Corvallis, Oregon	"The Role of the Reaction Between Seawater and the Oceanic Crust in Regulating the Chemical Composition of Seawater"

In recent years there has been an increasing awareness of the adverse affects on marine life resulting from chemical changes in sea water caused by the indiscriminate dumping of pollutants in the world's oceans. If marine life is to be maintained the chemical composition of sea water must be kept in proper equilibrium. Determing the extent to which the interaction of the sea and the ocean's crust assists in maintaining this chemical equilibrium is the purpose of this study, to be jointly sponsored by the Physical Research Laboratory at Ahmedabad, India.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 17,000
FY 1973 est. 15,000

III. ISRAEL

a. On-Going and Pending Astrophysics and Earth Sciences Projects in Israel

	Institution	Title of Project
163.	Smithsonian Astrophysical Observatory Cambridge, Massachusetts	"An Astronomical Observing Program in Israel"

This observing program in Israel will accumulate valuable data gathered at the same latitude and approximately half way around the world from the U.S. which can be profitably compared with similar data gathered by observatories in the Western Hemisphere. The location of comparable observing programs in Israel and the United States makes possible continuous observation of certain celestial phenomena as the earth rotates. Individual projects included in the program, on which a number of United States institutions will co-operate with the Smithsonian, are set forth separately, as follows:

a)	U.S. Navel Research Laboratory, Washington, D.C. and Massachusetts Institute of Technology	"To Conduct Optical and Photoelectric Monitoring of X-ray Sources"

Certain types of stars and other heavenly bodies emit x-rays. This study aims to photograph selected sources of these rays and measure the intensity of the light they produce. Normally these types of x-rays do not penetrate the earth's atmosphere and are therefore studied through artificial satellites. This study will make observations at the same time as the satellites and the two observations can then be compared, resulting in a more accurate knowledge of the physical processes involved.

b)	California Institute of Technology	"To Conduct Photoelectric Monitoring of the Continuum and Line Emission from Quasi-Stellar Objects (QSO) and the Nuclei of N-Type Galaxies"

Photoelectric monitoring involves the measurement of light intensity electrically. Light intensities are measured as they appear in the colored bands contained in the spectra produced by given celestial bodies. Quasi-stellar objects (often called quasars) are highly compacted bodies, first discovered as the sources of radio emissions. By measuring the light intensities in the spectra produced by these bodies we learn more about the nature of the physical processes involved in these unusual conglomerations.

c)	Smithsonian Astrophysical Observatory	"To Conducat a High-Dispersion Abundance Analysis of Stars in the Pleiades"

Abundance analysis involves determination of the relative quantities of chemicals to be found in given types of heavenly bodies. The Pleiades is a typical star cluster. It is now assumed that the formation of all the stars in a cluster does not take place at the same time, but may be spread out over intervals of about ten million years; and it is also assumed that those stars formed earliest would be on the outskirts of the cluster. By examining the chemical elements in different stars of the cluster, this study will be able to test this hypothesis.

	Institution	Title of Project
d)	State University of New York at Stony Brook	"To Determine the Rate of Star Formation in Young Clusters"

Using photoelectric measurements, this study aims to calculate the age of individual stars in star clusters from which the rate of star formation can be determined. The study will also measure the velocity of rotation of each star and determine how that velocity changes with the age of the star. It is believed that sudden changes in the star's rotation velocity could indicate that planets are being formed (any star throwing off planets would tend to slow down, in accordance with the laws of physics.)

	Institution	Title of Project
e)	Harvard College Observatory, Cambridge, Massachusetts	"To Conduct Photometric Observations of the High Balmer Lines (Near the Balmer Limit) and the Balmer Continuum in Planetary Nebulas"

The series of lines in the spectrum which are produced by hydrogen are called Balmer Lines. The present study aims to resolve, by the analysis of these lines of the spectrum, the divergent results which have been obtained in the study of these nebulas by radio and by optical means.

U.S. Dollar Equivalent in Israeli Pounds	FY 1972	95,000
	FY 1971	142,990
	FY 1970	275,200

	Institution	Title of Project
164.	Smithsonian Astrophysical Observatory, Cambridge, Massachusetts	"A Study of the Collective Behavior of Self-Gravitating Systems"

This is a mathematical study being conducted with Israeli astronomers which attempts to understand the mathematical laws governing the evolution of galaxies, and why star systems like the one including our own earth do not collide.

U.S. Dollar Equivalent in Israeli Pounds	FY 1972	15,600
	FY 1971	15,000
	FY 1970	13,000
	FY 1969	5,000
	FY 1968	42,000

IV. PAKISTAN

a. On-Going and Pending Astrophysics and Earth Science Projects
None.

b. New Astrophysics and Earth Sciences Projects in Pakistan

	Institution	Title of Project
165.	University of Hawaii Honolulu, Hawaii	"Compilation of Surface Geophysical Data on a National Level"

The preliminary to any type of research is the compilation of data already existing. This project aims to compile, supplement where necessary with direct observation and integrate the various available geophysical data on Pakistan. This data will be correleated to existing satellite geophysical data. The result will be of considerable benefit in the planning and utilization of natural resources.

U.S. Dollar Equivalent in Pakistani Rupees	FY 1974 est.	30,000
	FY 1973 est.	30,000

V. POLAND

a. On-Going and Pending Astrophysics and Earth Sciences Projects in Poland

	Institution	Title of Project
166.	Smithsonian Astrophysical Observatory Cambridge, Massachusetts	"Solar Radiation Pressure Perturbations upon the Passive Geodetic Earth-Orbiting Satellite (PAGEOS)"

Passive Geodetic Earth-Orbiting Satellite (PAGEOS) is actually a large balloon which was lifted into orbit in 1966. This satellite, being both large and light in weight, is very sensitive to changes in solar radiation. By means of this project it is hoped to utilize some of the considerable expertise in this field which already exists in Poland in the analysis of data obtained by PAGEOS. Polish scientists have been pre-eminent in astronomy and astrophysics since the time of Copernicus and cooperative projects in Poland are expected to be especially valuable.

U.S. Dollar Equivalent in Polish Zolties	FY 1974 est.	83,000
	FY 1973 est.	30,000

	Institution	Title of Project
167.	Smithsonian Astrophysical Observatory, Cambridge, Massachusetts	"Air Glow and Ionospheric Characteristics at the Magnetic Equator"

Air glow is the faint illumination in the night sky caused by certain physical processes in the upper atmosphere. The ionosphere is a layer of the upper atmosphere consisting of ionized atoms (ions are atoms with missing electrons). Radio waves are directed into

the ionosphere and are reflected back by the ionosphere; in the process the properties of the ionosphere, through which artificial satellites must pass into outer space, are better understood.

U.S. Dollar Equivalent in Polish Zloties — FY 1974 est. 18,000

	Institution	Title of Project
168.	Smithsonian Astrophysical Observatory, Cambridge, Massachusetts	"Colloquim on Reference Coordinate Systems for Earth Dynamics"

As the earth moves through space, its poles of rotation wander over the surface, and the continents drift with respect to each other. Where then is ground zero, the reference frame for geodetic measurements? An international panel will prepare a book defining the problem and proposing a solution.

U.S. Dollar Equivalent in Polish Zloties — FY 1974 est. 50,000

	Institution	Title of Project
169.	Smithsonian Astrophysical Observatory, Cambridge, Massachusetts	"Free-Falling Body Experiment"

One of the ways to measure the gravitational field of the earth is to observe a free-falling body coming in from space. Precision-measurements of a re-entering rocket will be made by NASA in connection with another experiment. Analysis of this data in Poland will provide information on the gravitational field.

U.S. Dollar Equivalent in Polish Zlotys — FY 1974 est. 57,000

	Institution	Title of Project
170.	Smithsonian Astrophysical Observatory, Cambridge, Massachusetts	"Contributions to the International Satellite Geodesy Experiment"

The International Satellite Geodesy Experiment is a cooperative international program of satellite observation which is engaged in studies seeking to determine the true shape of the earth. A number of countries, including Poland, are tracking the same satellites being tracked by the United States. Support for the existing tracking station at Borowiec will not only enhance the study of local geodetic problems but also provide data for global research in polar motion and related fields.

U.S. Dollar Equivalent in Polish Zloties — FY 1974 est. 72,000; FY 1973 est. 17,000

	Institution	Title of Project
171.	The University of Texas Austin, Texas	"Heavy Element Synthesis by the r-process"

Astrophysicists have predicted the existence of many elements not yet discovered. The r-process is the one which produces the heavy radioactive metallic elements. In theory, as yet undiscovered superheavy elements exist in stars. Whether the r-process is responsible for the creation of these theortical superheavy elements is the subject of this study, in cooperation with the University of Warsaw.

U.S. Dollar Equivalent in Polish Zloties FY 1974 est. 2,000

	Institution	Title of Project
172.	Smithsonian Astrophysical Observation, Cambridge, Massachusetts	"Filtering Equations and their Applicability to Earth Physics Problems"

The application of so-called filtering equations to complex analytical problems often permit their reduction to manageable proportions. What is not known is whether this technique can be applied to earth physics problems. A theoretical study with Polish scientists will attempt to provide the answer.

U.S. Dollar equivalent in Polish Zlotys FY 1974 est. 30,000

VI. TUNISIA

a. On-Going and Pending Astrophysics and Earth Sciences Projects in Tunisia

	Institution	Title of Project
173.	Duke University Durham, North Carolina	"Sedimentation Studies at Bahiret El Bibane on the Tunisian Coast"

Sedimentation, the process by which many of the geological strata under the earth were formed, is a process which is still going on today. A lagoon located in South Tunisia affords an unusual opportunity to study the process. An understanding of sedimentation and sedimentary strata already formed in the geological past is indispensable for any systematic exploration for oil or minerals beneath the surface of the earth. The Principal Investigator hopes to obtain data which can be compared with data already gathered in the Bahamas.

U.S. Dollar Equivalent in Tunisian Dinars		
	FY 1974 est.	15,000
	FY 1973	27,000
	FY 1972	9,000

VII MULTI-COUNTRY

a. On-Going and Pending Multi-country Astrophysics and Earth Sciences Projects

	Institution	Title of Project
174.	Center for Short-Lived Phenomena Smithsonian Institution Washington, D.C. and Cambridge, Massachusetts	"Excess Currency Support for the Center for Short-Lived Phenomena"

The Center for Short-Lived Phenomena is a clearing house for the receipt and dissemination of information concerning rare or infrequent natural events that might otherwise go unobserved or uninvestigated: remote volcanic eruptions, the birth of new islands in the ocean, the fall of meteorites, large fire balls, sudden changes in biological or ecological systems, and so on. With today's concern for the natural environment, the Center for Short-Lived Phenomena serves an indispensable need of the entire American scientific community, since it collects and disseminates information about natural events while they are happening and makes it possible in many cases for scientists throughout the country to study them while they are happening. The utility of this is obvious in the case of phenomena such as erupting volcanoes, tidal waves, plagues of locusts, and similar occurrences which can have such a drastic impact on man and his environment. If the nature of some of these phenomena were better understood preventive measures could be more readily applied.

U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	4,000
	FY 1973 est.	3,000
	FY 1972	3,000
U.S. Dollar Equivalent In Yugoslav Dinars	FY 1972	3,000
U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	3,000
	FY 1973 est.	4,000

D. MUSEUM PROGRAMS

I. EGYPT

a. On-Going and Pending Museum Programs in Egypt

	Institution	Title of Project
175.	United States National Museum Smithsonian Institution Washington, D. C.	"Film Documentation of Field Expeditions."

Most of the projects funded by the Smithsonian Foreign Currency Program are involved in one way or another with the collection of data. A neglected aspect of documentation in this age of the media has been the recording of essential aspects of field projects on film. Because of its variety of highly visible archeological projects, Egypt has been selected for a pilot project of filming various aspects of a number of Smithsonian-supported field projects. The resulting film will be retained not merely as essential project documentation--much as field notes, drawings, maps, and still photographs are regularly retained as project documentation--but also for use in public education programs in the Smithsonian and other museums and also in the schools.

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 4,000

b. New Museum Programs in Egypt

	Institution	Title of Project
176.	Brooklyn Museum Brooklyn, New York	"Exchange of Curators and Exhibit Designers and Technicians between Brooklyn Museum and the Luxor Museum Egypt".

The study of cultural objects of ancient Egypt in the Luxor Museum and the preparation of a plan for their exhibition there employing the best in current American exhibits science is the object of this exchange of museum personnel.

U.S. Dollar Equivalent in Egyptian Pounds FY 1974 est. 5,000

II. INDIA

a. On-Going and Pending Museum Programs in India

	Institution	Title of Project
177.	United States National Museum Smithsonian Institution Washington, D. C.	"Development of a Teaching Museum of Science and Technology."

The purpose of this project is to assist, under the U.S. National Museum Act, with museum expertise and support the program of the International Council of Museums (ICOM), a UNESCO affiliate, to develop teaching museums of science and technology in Asia and Africa. For example, the Smithsonian contributed in FY 1969 to studies resulting in recommendations to ICOM that there be established in India a laboratory for basic exhibits in science and technology where teaching exhibits will be built for circulation in industrializing countries. The experiment will provide opportunities to American museum specialists to observe the effectiveness of exhibits in teaching basic science and technology to people of all cultural backgrounds.
This project grew out of a resolution of the UNESCO affiliated International Council of Museums to establish a regional museum laboratory to design and produce teaching exhibits needed by developing countries. This laboratory would develop exhibits which for example, would graphically show semi-literate agricultural populations the effect on crops of new techniques as compared to traditional methods. Participating American museum specialists would evaluate the effectiveness of various museum techniques in teaching basic science to people of varying cultural backgrounds who are in the process of developing and improving their societies and ways of doing things.

U.S. Dollar Equivalent in Indian Rupees	
FY 1974 est.	15,000
FY 1973 est.	40,000
FY 1971	3,554
FY 1970	13,450
FY 1969	5,400
FY 1968	41,810

	Institution	Title of Project
178.	Smithsonian Institution Traveling Exhibition Service (SITES) and the Smithsonian's National Collection of Fine Arts (NCFA), Washington, D. C.	"Preparation of an Exhibit Catalogue for a Unique Collection of Indian Paintings of the Moghul Period."

SITES gathers exhibitions from the United States and abroad and circulates them at cost to American museums and other institutions. One of the objectives of SITES is to bring to the United States exhibitions of art and other cultural manifestations of foreign lands which would otherwise be little known to us. One such project would be the bringing of the great collection of miniature paintings from the Moghul period and related items from the pre-British Muslim monarchies of India, from the museum of Benares Hindu University to the United States. The Special Foreign Currency Program support would be applied to the

curatorial research and preparation of a scholarly catalogue of the collection. American museums throughout the country are interested in present exhibitions such as this which they could not easily obtain except through SITES.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 5,000

	Institution	Title of Project
179.	Division of Performing Arts Smithsonian Institution Washington, D. C.	"Live Performances of Traditional Indian Performing Arts by Indian Artistic Troupes."

The Smithsonian's Division of Performing Arts has become justly famous for making better known living examples of American traditional songs and dances, notably through its annual Festival of Folk Life held on the Mall of the nation's capital around July 4 each year. It is proposed in this project to bring to America for live performances troupes of Indian artists capable of making India's traditional song and dance live here. Such troupes would be able to support themselves through engagements in this country. The funds requested here would be used to locate in India suitable troupes and to make appropriate arrangements there for the particular performances wanted and to bring the groups to America.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 5,000

b. New Museum Programs in India

	Institution	Title of Project
180.	National Museum of History and Technology, Smithsonian Institution, Washington, D. C.	"A Study of the Medical History of India Preparatory to Consultations on Plans for an Indian National Medical Museum".

Indians are served by a traditional and a Western system of medicine. A study of both is proposed with the results to appear as publications and to serve as a basis for consulting on plans for an Indian National Medical Museum in New Delhi.

U.S. Dollar Equivalent in Indian Rupees FY 1974 5,000

	Institution	Title of Project
181.	Los Angeles County Museum of Art, Los Angeles, California	"A Study of Museum Education Services in India".

Development of curriculum related museum programs for primary and secondary school children is proceeding in a number of countries simultaneously. The Los Angeles County Museum of Art is known for its collection of Indian art. Educational services

at this Museum will benefit from the study of similar services in the Museums of Art in India.

U.S. Dollar Equivalent in Indian Rupees FY 1974 est. 5,000

III. PAKISTAN

a. On-Going and Pending Museum Program in Pakistan

	Institution	Title of Project
182.	Smithsonian Institution Traveling Exhibition Service, Washington, D.C.	"An Exhibition of Pakistani Ethnographic Materials and Accompanying Scholarly Catalogue."

It is proposed that SITES circulate examples of the traditional arts and crafts of Pakistan. This project would support the preparation of a catalogue to accompany the circulating exhibition and would support the curatorial work required to select and describe the materials to be included. This exhibit would be presented by a number of American museums around the country.

U.S. Dollar Equivalent in Pakistani Rupees FY 1974 20,000

IV. POLAND

a. On-Going and Pending Museum Programs in Poland

	Institution	Title of Project
183.	National Museum of History and Technology Smithsonian Institution Washington, D. C.	"Preparation of Ethnographic Materials to Supplement National Collections."

The Smithsonian was given last year a small collection of ethnographic materials (Costumes, household objects, etc.) by the Polish Embassy at Washington. The Polish Embassy has offered to expand this collection to make it suitable for circulation by SITES, and thus make it available to many other American museums; and also for study by the Museum of History and Technology. This project would provide support for a curator to study and collect in Poland the necessary materials to augment the basic collection and to transport these materials and those provided by the Government of Poland to the Smithsonian.

U.S. Dollar Equivalent in Polish Zloties FY 1974 est. 5,000

	Institution	Title of Project
184.	National Museum of History and Technology Smithsonian Institution Washington, D. C.	"Ethnographic Collections for U.S. Bicentennial Exhibits Based on the Culture of Immigrant Americans."

As a part of the preparations for the U. S. Bicentennial exhibitions, the Museum of History and Technology will be preparing studies of the principal cultures of origin of immigrant Americans and making collections of ethnographic materials illustrating this cultural heritage. Studies and collections from Poland would be supported by the Special Foreign Currency Program.

U.S.Dollar Equivalent in Polish Zloties FY 1974 est. 5,000

b. New Museum Programs in Poland

	Institution	Title of Project
185.	Office of Exhibits Programs Smithsonian Institution Washington, D. C.	"Preparation of Visual Aids for Exhibits of the Environment at the Smithsonian and for Circulation to United States Museums"

Smithsonian competence in ecosystem studies and exhibits preparation will be combined with Polish competences in these fields, particularly in animated film production, to prepare basic exhibits materials on ecology for use at the Smithsonian and throughout the United States under the auspices of the Smithsonian Institution Traveling Exhibitions Service as well as in Poland.

U.S. Dollar Equivalent in Polish Zloties FY 1974 est. 10,000

FY 1973 13,000

	Institution	Title of Project
186.	National Air and Space Museum Smithsonian Institution Washington, D.C.	"To Conduct an Exchange of Historic Aircraft and to Study the History of Flight in Poland"

Aircraft of two World Wars and of civilian airlines of eastern Europe are available for study and exchange in Poland. It is proposed to support the exchange of airframes and parts within the programs of the rapidly developing National Air and Space Museum.

U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	5,000

V. YUGOSLAVIA

a. On-Going and Pending Museum Programs in Yugoslavia

None

b. New Museum Programs in Yugoslavia

See New Multi-Country Museum Programs on the following page.

VI. MULTI-COUNTRY

a. On-Going and Pending Multi-Country Museum Programs

	Institution	Title of Project
187.	United States National Museum, Smithsonian Institution, Washington, D.C.	"A Program of Professional Museum Exchanges"

The purpose of this project is to initiate a program of professional training for museum curators and technicians in collaboration with museums of India, Pakistan, Poland, Tunisia, and Egypt, through two-way exchanges of personnel for on-the-job training. Participants would be expected to serve at least six months in a museum housing collections of direct importance to their professional development.

U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est.	5,000
	FY 1973 est.	20,000
	FY 1972	5,000
U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	5,000
	FY 1973 est.	25,000
	FY 1972	9,000
U.S. Dollar Equivalent in Pakistani Rupees	FY 1974 est.	15,000
	FY 1973 est.	10,000
U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	5,000
	FY 1973 est.	20,000
	FY 1972	7,300

U.S. Dollar Equivalent in Tunisian Dinars	FY 1974 est.	5,000

b. New Multi-Country Museum Programs

	Institution	Title of Project
188.	Division of Performing Arts Smithsonian Institution Washington, D. C.	"A Study of Cultural Cognates and Living Museology"

The Smithsonian Bicentennial Program proposes to present side-by-side on the Mall in Washington and in conjunction with the Bicentennial Programs of interested States, practitioners of folk arts and crafts as they exist in the lands of our forefathers and as they survive in the homes and communities of America today. This program, "Old Ways in the New World," will carefully seek out the grass-roots practitioners of folk traditions, compare those of the land of origin with those surviving in this country and publish the results as anthropological studies of cultural change and as lively films and records for both students and folk art enthusiasts. The Program is global, seeking to study and present these significant surviving traditions wherever it is feasible to do so. Excess foreign currencies will be used in those countries where such accounts exist.

U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est.	3,000
U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	2,000
U.S. Dollar Equivalent in Pakistani Rupees	FY 1974 est.	1,000
U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	13,000
U.S. Dollar Equivalent in Tunisian Dinars	FY 1974 est.	14,000
U.S. Dollar Equivalent in Yugoslav Dinars	FY 1974 est. FY 1973 est.	49,000 62,000

	Institution	Title of Project
189.	National Museum of Natural History Smithsonian Institution Washington, D. C.	"Exchange of Curators and Exhibit Designers, Technicians and Conservators between the U.S. National Museum and Natural History Museums in Egypt, India and Tunisia"

The study of taxonomic collections, their curation, conservation, exhibition and integration into the educational systems of Egypt, India, and Tunisia, is proposed through the exchange of museum professionals and trainees with the Smithsonian's National Museum of Natural History. The Natural History Museum in Cairo proposes coordinated studies and exchanges with curators of taxonomic collections in Syria and Iraq as well.

U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est.	4,000
U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	5,000
U.S. Dollar Equivalent in Tunisian Dinars	FY 1974 est.	5,000

E. GRANT ADMINISTRATION

	Institution	Title of Project
190.	Office of International Activities Foreign Currency Program Smithsonian Institution Washington, D. C.	"To Defray Costs of Grant Administration Payable in Foreign Currencies"

In order to administer a national program of grants for research which is entirely conducted overseas, there is an irreducible minimum amount of time which must be spent on the ground in the countries abroad by program personnel. The program endeavors to keep administrative costs to a minimum but some are unavoidable. Some of the costs shown represent dollar savings (for example, for audit), since if the work were not done abroad at a cost in foreign currencies, it would have to be done in the U.S. at dollar cost. Administrative costs have remained a small percentage of the total program appropriation. For example, in Fiscal Years 1968, 1969, and 1970, when the appropriation remained constant at 2,316,000, the foreign currency costs for grant administration were 10,000, 15,000, and 20,000 respectively. A breakdown for costs and estimated costs for Fiscal Years 1972, 1973, and 1974, is as follows:

U.S. Dollar Equivalent in Egyptian Pounds	FY 1974 est.	8,000
	FY 1973 est.	2,000
	FY 1972	2,000
U.S. Dollar Equivalent in Indian Rupees	FY 1974 est.	10,000
	FY 1973 est.	3,000
	FY 1972	5,000
U.S. Dollar Equivalent in Pakistani Rupees	FY 1974 est.	5,000
	FY 1973 est.	2,000
	FY 1972	----
U.S. Dollar Equivalent in Polish Zloties	FY 1974 est.	5,000
	FY 1973 est.	3,000
	FY 1972	----
U.S. Dollar Equivalent in Tunisian Dinars	FY 1974 est.	2,000
	FY 1972	2,000
U.S. Dollar Equivalent in Yugoslav Dinars	FY 1974 est.	--
	FY 1973 est.	--
	FY 1972	2,000
U.S. Dollar Equivalent in Israeli Pounds	FY 1972	2,000