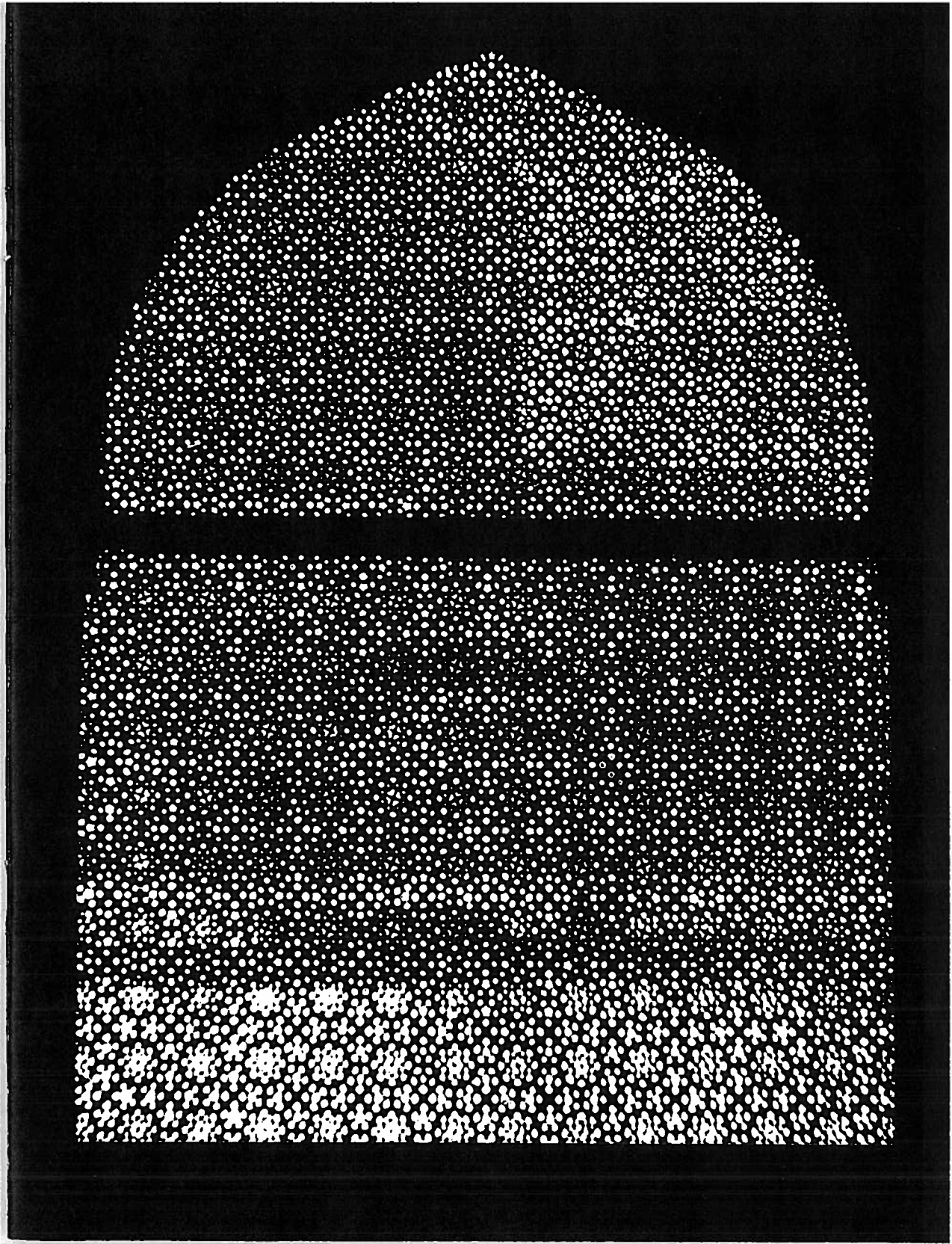


# KANPUR INDO-AMERICAN PROGRAM



# STEERING COMMITTEE

Stephen S. Attwood  
Dean of the College of Engineering  
The University of Michigan

David P. Billington\*  
Associate Professor of Civil  
Engineering  
Princeton University

Harold A. Bolz  
Dean of Engineering  
The Ohio State University

Paul F. Chenea, Chairman  
Vice President for Academic  
Affairs  
Purdue University

Derek A. Davenport  
Associate Professor of Chemistry  
Purdue University

Donald E. Hudson  
Professor of Mechanical  
Engineering  
California Institute of Technology

Gilbert Oakley, Jr.  
Vice President  
Educational Services Incorporated

Robert H. Scanlan  
Professor of Engineering  
Mechanics  
Case Institute of Technology

Alexander C. Scordelis  
Professor of Civil Engineering  
University of California

Louis D. Smullin  
Professor of Electrical Engineering  
Massachusetts Institute of  
Technology

\* Acting for Professor David C. Hazen,  
1964-65.

B. Richard Teare, Jr.  
Dean of College of Engineering  
and Science  
Carnegie Institute of Technology

Former members of the Steering  
Committee for the Kanpur Indo-  
American Program are shown in  
the list that follows:

Arthur H. Benade  
(1961-64)  
Associate Professor of Physics  
Case Institute of Technology  
(Staff Member at Kanpur, 1964-65)

Norman C. Dahl  
(Chairman, 1961-62)  
(Special Advisor, 1964-65)  
Professor of Mechanical  
Engineering  
Massachusetts Institute of  
Technology  
(Program Leader at Kanpur,  
March, 1962 to May, 1964)

Robert S. Drake, Jr.  
(1961-63)  
Professor and Chairman of the  
Department of Mechanical  
Engineering  
Princeton University  
(Visited IIT/Kanpur, 1961)  
(Now Consultant  
Arthur D. Little, Inc.)

Robert S. Green  
(1961-64)  
(Vice Chairman, 1962 to  
June, 1964)  
Associate Dean of the College of  
Engineering  
Executive Director of the  
Engineering Experiment Station  
The Ohio State University

(Program Leader at Kanpur,  
July, 1964 through July, 1966)

David C. Hazen  
(1963-64)  
Professor of Aeronautical  
Engineering  
Princeton University  
(Staff Member at Kanpur, 1964-65)

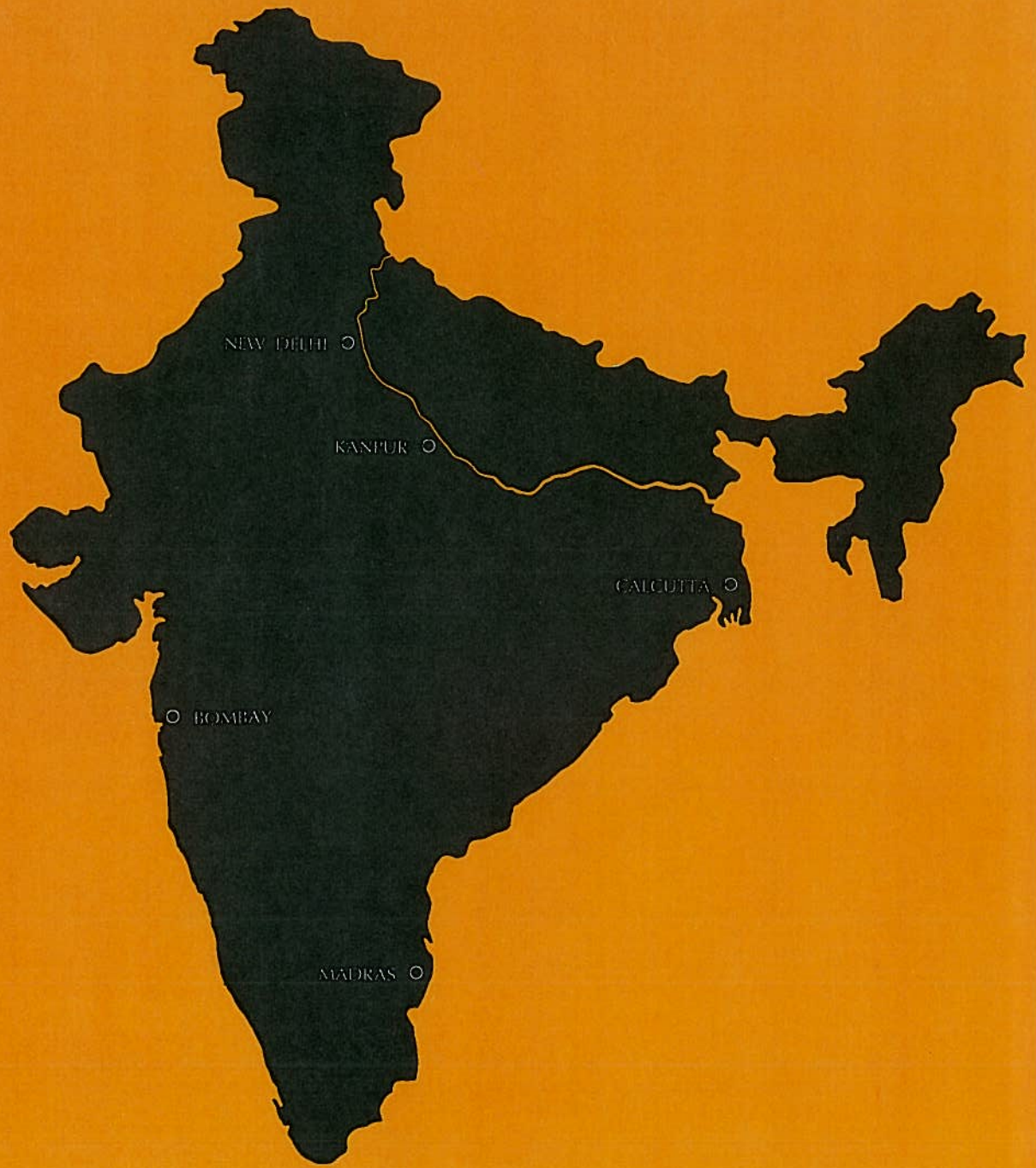
Erman A. Pearson  
(1961-62)  
Professor of Sanitary Engineering  
University of California (Berkeley)  
(Visited IIT/Kanpur, 1961)

Edward R. Schatz  
(1961-63)  
Vice President for  
Academic Affairs  
Carnegie Institute of Technology

William E. Stirton  
(Vice Chairman, 1961)  
Vice President and  
Director of the Dearborn Center  
The University of Michigan  
(Director, American Society for  
Engineering Education Mission  
to India, 1958)

*Program Leader*  
Dean Robert S. Green  
Kanpur Indo-American Program  
Indian Institute of  
Technology/Kanpur  
Kalyanpur Campus  
Kanpur, U. P., India  
Telephone 37935

*Program Administrator*  
Shepherd Brooks  
Educational Services Incorporated  
108 Water Street  
Watertown, Massachusetts 02172  
Telephone (617) 926-0600



# INTRODUCTION

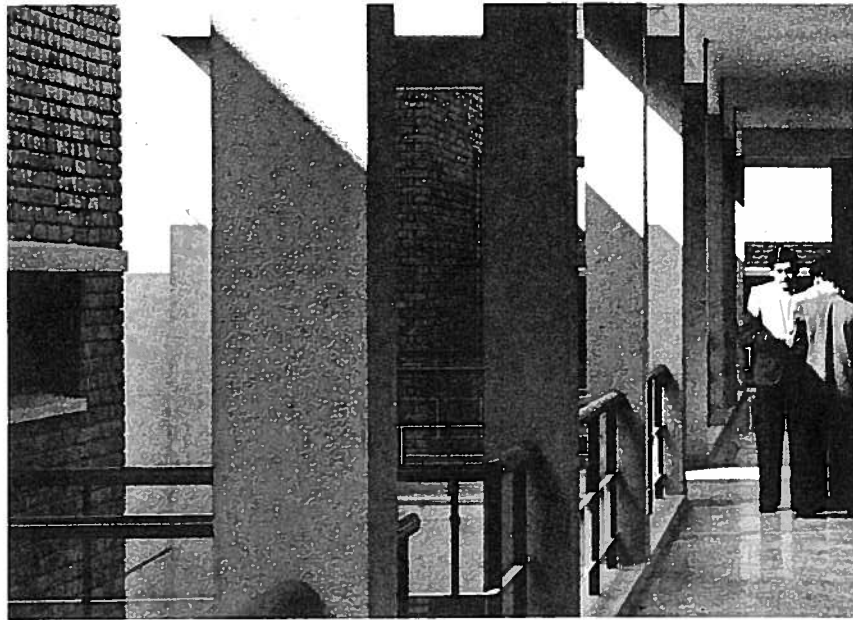
The Kanpur Indo-American Program is a group effort in which a Consortium of U. S. educational institutions is assisting in the development of the Indian Institute of Technology in Kanpur, India. The members of the Consortium are: California Institute of Technology, Carnegie Institute of Technology, Case Institute of Technology, Educational Services Incorporated (ESI), Massachusetts Institute of Technology, The Ohio State University, Princeton University, Purdue University, University of California, and The University of Michigan.

The United States supports the Program through the Agency for International Development (AID) by means of a contract with ESI and supplementary agreements with the other members of the Consortium.

ESI administers the Program under the policy direction of a Steering Committee to which the president of each institution has appointed a representative.

The Program consists of three major components: (1) Consortium staff (faculty) working at Kanpur, (2) Kanpur faculty receiving on-the-job experience in Consortium institutions, and (3) planning and procuring equipment and materials (including books) which are not available in India. Each institution participates in all three components.

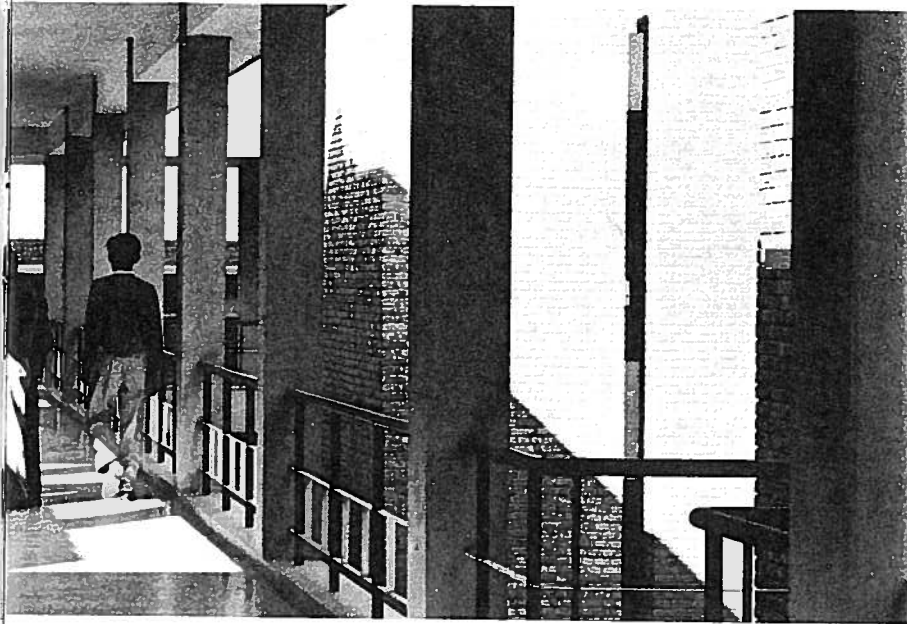
Kanpur is a growing industrial city with a population of more than a million, located about 300 miles from New Delhi on the South Bank of the River Ganges.



The Indian Institute of Technology there (IIT/Kanpur) is being developed by the Government of India into a major center for the education of engineers and scientists, both undergraduate and graduate, and for research in engineering and science. It is intended that the IIT/Kanpur will be patterned on the lines along which American technological institutions are evolving — with strong science, humanities, and social science activities interacting with parallel engineering programs.

As of the summer of 1964 there were about 200 on the academic staff of the IIT/Kanpur, including nearly 100 faculty in the professorial and lecturer grades. Almost 800 undergraduates were in residence, 300 in the first year, 200 in the second year, and 100 each in the third, fourth, and fifth years of the five-year undergraduate programs. At present there are undergraduate degree programs in aeronautical, chemical, civil, electrical, mechanical, and metallurgical engineering. Research and graduate study has been started in these engineering fields as well as in chemistry, mathematics, physics, the social sciences, and the humanities.

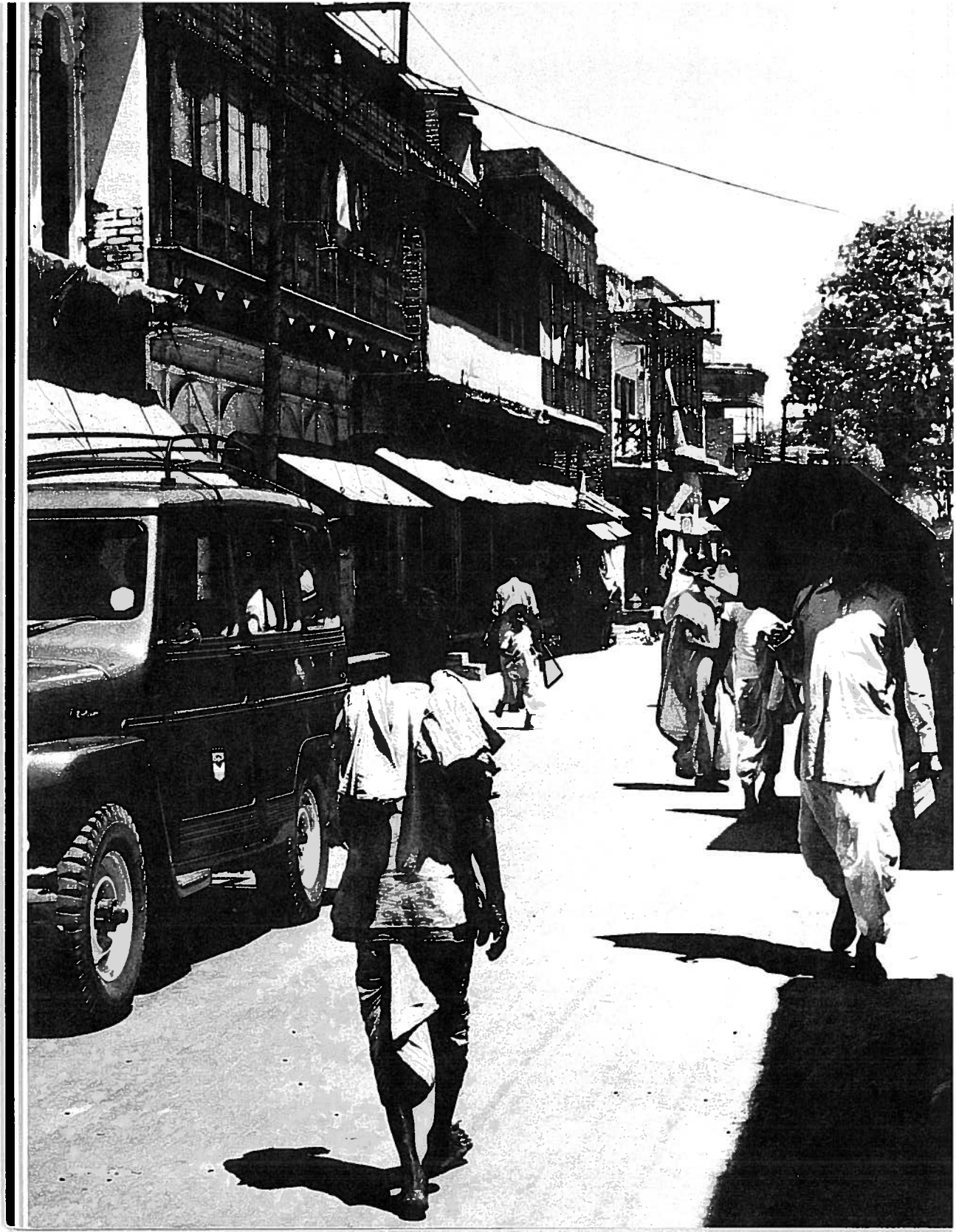
The job to be done at Kanpur is so broad that each Consortium staff member working there has several avenues through which he may be effective in collaborating with Kanpur faculty. Among these are the development of curricula and of individual areas of instruction, the development of teaching methods and materials appropriate



to the environment, the planning of teaching and research laboratories and the purchase and installation of equipment to make the laboratories operative, the planning and development of library facilities, and the establishment of research programs with particular emphasis on finding significant problems related to Indian conditions and needs. Each Consortium staff member continues to receive his regular pay and fringe benefits from his own university as well as certain increments that are intended to make it possible for him to serve at Kanpur with no financial loss. All staff members have housing facilities provided in Kanpur or on the campus and receive allowances for transportation of their families and education of their children.

The number of American staff required in Kanpur at any one time is not large; about twenty-five is the maximum. Staff members are selected on the basis of high professional competence and personal qualifications likely to enable them to be effective in this particular situation. The Consortium has within it an adequate pool of these specially qualified faculty and, in addition, has the advantage that it brings to Kanpur a broader spectrum of ideas and resources than would be available from a single institution.

Each Steering Committee member is responsible for all Program activities at his institution. Further information may be obtained from these representatives.





Four years ago, a tract of land in the village of Kalyanpur about six miles from Kanpur was half-cultivated and half-barren. Since then this 1,200-acre tract has been transformed into the beautiful campus of the Indian Institute of Technology. The age-old humdrum routine of village life has given place to the hectic activity of young students engaged in the exciting pursuit of knowledge.

Established in 1960, the Indian Institute of Technology/Kanpur is one of the five institutes set up in four States of India. The Institute at present has training facilities for undergraduate studies in five branches of engineering and for graduate courses leading to the Ph.D. in physics, chemistry, and mathematics as well as in engineering.

The multi-faceted knowledge available comprises nine departments — chemical, civil, electrical, mechanical, and metallurgical engineering; chemistry, mathematics, physics, and humanities. There is also a computer center which serves all departments.

Among the salient features of education at IIT are tutorials, surprise and quiz tests, student counseling, and a plan of earning while learning. IIT's atmosphere is conducive to self-development; besides studies, students participate in sports, dramatics, debates, and other extra-curricular activities and practice individual hobbies.

The curriculum of the Institute is being developed with the assistance of nine American institutions noted for their technological training programs. All nine schools



are cooperating in the Kanpur Indo-American Program to provide IIT with a rounded, complete program of technical training for Indian students. A principal objective is to develop research standards of international quality.

"Interdisciplinary" is a word often heard around the corridors of IIT. A "discipline" is academese for a branch of knowledge or instruction, and the accent is on interdisciplinary activity because knowledge is a whole whose various parts or branches are interdependent and highly relevant to one another. This approach is emphasized from the very beginning of study at IIT. In the undergraduate program, lasting five years, all students take common courses for the first three years. Only after that do their paths diverge as specialization begins.

The humanities and social sciences are sometimes considered as areas of study out of place in an institute of technology. Their inclusion in IIT's curriculum is justified by Professor Norman C. Dahl, first leader of the Kanpur Indo-American Program, who says: "India's problems are not only technological but also sociological. We have found in America that to stress these studies makes very good sense, and it makes even better sense in India."

The Institute has its campus some six miles out of Kanpur, at Kalyanpur, a suburb of the city. As IIT buildings are completed, the rural look is steadily disappearing,



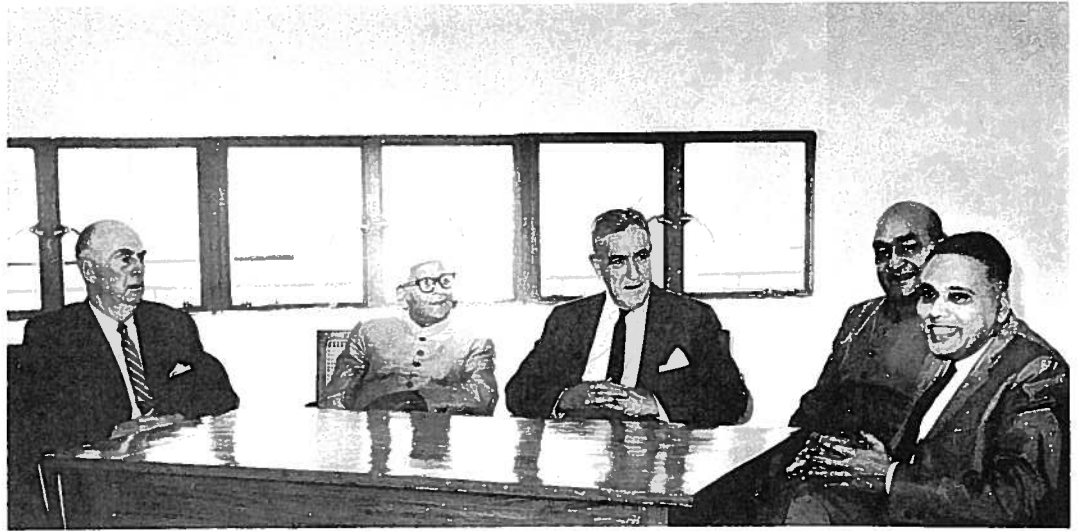
although it is still apparent along the edges of the campus. "Come back again in two or three years," visitors are told. "Then there'll really be something to see."

There is plenty to see even now. A magnificent library building, a stadium, an open-air theatre are in the planning stage, but there already are workshops, classrooms, laboratories, housing for faculty, and a large hostel block. There will be five similar hostels ultimately.

As great importance is attached to the stimulation of a spirit of free and searching enquiry, students are bound not merely to academic disciplines, but are encouraged in their extra-curricular activities as well. This, however, applies both to staff and students alike. As Dr. M. S. Muthana, deputy director of IIT, puts it: "We want the environment to be free and unfettered for self-expression and self-development."

A visit to the hostel is exhilarating. The rooms are fair-sized, bright, and comfortable. Discipline is admirable, and maintained by the boys themselves without strict professional supervision. The Students' Gymkhana has organized hobby shops for radio-making, leathercraft, gardening, and aeromodelling, and has literary, musical, film, and drama sections. The student basketball team is unbeaten in the region.

Even more deserving of attention is the students' "earn while you learn" plan. With few scholarships available, students help pay their tuition by doing paid volun-



A party of distinguished visitors at IIT/K: left to right, C. Tyler Wood, Former Director of the U.S. AID Mission to India; C. B. Gupta, Chairman of the Board of Governors of IIT/K; the Honorable Chester Bowles, U.S. Ambassador to India; and Sir Padimpat Singhania, Indian industrialist and a member of the Board of Governors of IIT/K; with Dr. P. K. Kelkar, Director of IIT/K.

tary off-hours work, waiting on table in the hostel mess and helping in the IIT library.

This library, which has already a collection of twenty to twenty-five thousand books, is housed in temporary quarters but is an impressive and integral part of IIT. Special emphasis has been placed on the development of library resources. Purdue University's library has taken responsibility for establishing the library; each time Purdue buys a book in a field of engineering or science, it buys a duplicate copy, catalogues it, and sends it to IIT/Kanpur, together with the catalogue cards.

Amidst the tall bookstacks, shelf upon shelf of them, a visitor will find tables always occupied by students, reading and taking notes. The library is also a meeting ground for faculty members and students.

Indeed, the whole staff-student relationship is informal — one of the most impressive aspects of life at IIT/Kanpur. To a large extent, this easy and constant contact between students and staff is due to IIT's being completely residential. There is also the fact that the staff is young, fresh, and eager; none of the professors is over forty. Students are free to approach professors with their difficulties, and the professors are ready to explain, help, and guide.

This helpfulness extends beyond academic life. A student counselling program is in operation, though still in a formative stage, and each professor is assigned as coun-



Members of the Steering Committee for the Kanpur Indo-American Program met with the late Prime Minister Jawaharlal Nehru (right) and the Honorable G. K. Chandiramani, Indian Minister of Education (right, behind), during the early stages of the establishment of the Program: (left to right) Professor Erman A. Pearson, Shepherd Brooks, Dean Robert S. Green, Professor Norman C. Dahl, and Professor Arthur H. Benade.

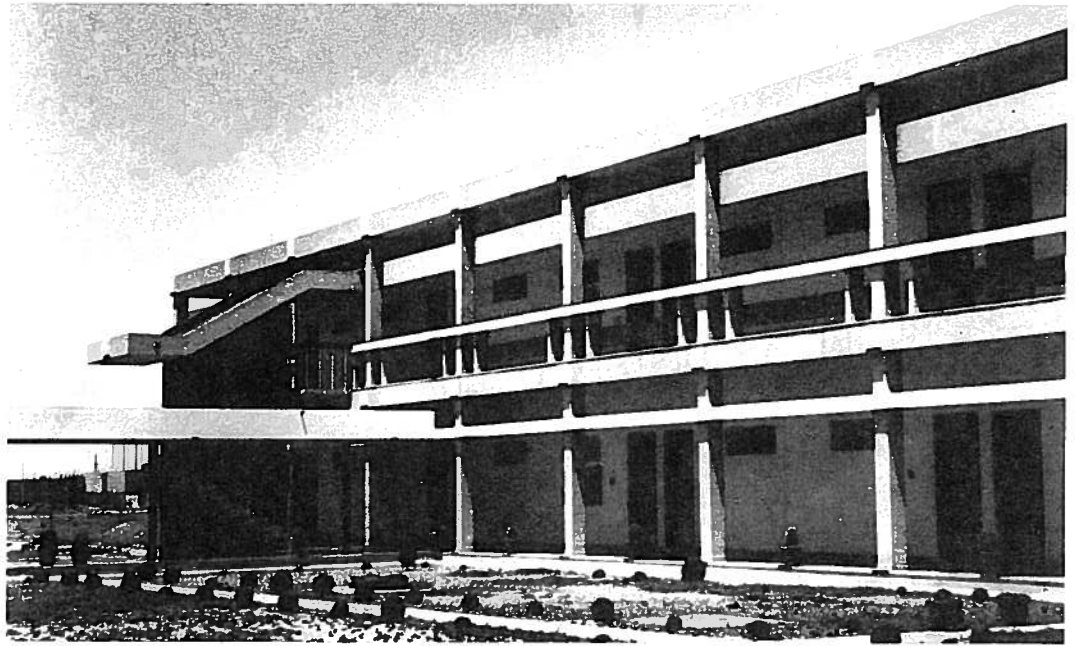
sellor to some twelve to fifteen students. Student counselling, highly developed in the United States, is still new in India. There are, naturally, other ways in which IIT/Kanpur has benefited from American experience. The pattern at IIT/Kanpur, Professor Dahl has said, is "strongly reflective of American experience, but it is not the same. It is tailored to India's needs today — and tomorrow."

The effort here is not to teach a few techniques, but to teach and develop the basic ways of thinking, the fundamental ideas.

For such an objective, academic flexibility is essential. "We want the various departments to have their own identity," says Dr. P. K. Kelkar, director of IIT, "but we don't want them to grow rigidly within themselves." IIT is completely autonomous and has its own regulations for the award of degrees and the conduct of examinations. The same flexibility applies also to the structure of the professorial hierarchy of the Institute. IIT's faculty, as Professor M. C. Chaturvedi of the Civil Engineering Department points out, is a "column structure" rather than a pyramidal one — that is, there are no fixed numbers of posts in the various grades; there may be as many, or almost as many, on the higher rungs as on the lower; and ascent is determined by merit rather than seniority.

The faculty has distinguished Indian and American professors working together. Two major aspects of the Kanpur Indo-American Program's collaboration with IIT are





the work of U.S. Consortium teachers and experts at the Kanpur Institute, and the procurement of equipment, materials, and books not available in India. One of many items already supplied under the Program is IIT's new radio-frequency counter, which registers frequencies to a ten-millionth of a cycle.

The majority of the members of the faculty are Indian. Since 1962 the American advisory staff has grown from nine to twenty-five.

Knowledge cannot be confined within any national or geographical barriers. These Americans and their Indian colleagues have assembled at IIT to fulfil one of India's long-felt needs: to provide a vital and comprehensive program of technical education for India's young technologists.

This description is adapted from an article by Austen Nazareth which first appeared in the June, 1964, issue of "Span" published in New Delhi, by the United States Information Service.

# staff members

The following list shows appointments made from April, 1962, through October, 1964:

Forman S. Acton* Associate Professor of Electrical Engineering Princeton University	Arthur W. Burks† Professor of Philosophy The University of Michigan	Massachusetts Institute of Technology
Robert R. Archer† Associate Professor of Engineering Case Institute of Technology	Richard LaLanne Carrouche Instrument Specialist and Technician in the Department of Electrical Engineering California Institute of Technology	Peter W. Fay Associate Professor of History California Institute of Technology
Holt Ashley Professor of Aeronautics and Astronautics Massachusetts Institute of Technology	O. L. Chavarria-Aguilar*† Professor of Linguistics and English The University of Michigan	William E. Fontaine§ Professor of Mechanical Engineering Purdue University
Glenn J. Battaglia (Administrative Officer) Educational Services Incorporated	Norman C. Dahl* Professor of Mechanical Engineering Massachusetts Institute of Technology	Richard L. Funkhouser Engineering Librarian Purdue University Libraries
Arthur Henry Benade Associate Professor of Physics Case Institute of Technology	Derek A. Davenport* Associate Professor of Chemistry Purdue University	Arthur Gill*† Associate Professor of Electrical Engineering University of California (Berkeley)
Vollmar E. Bergdolt* Associate Professor of Mechanical and Nuclear Engineering Purdue University	Gerhard J. Derge*§ Professor of Metallurgical Engineering Carnegie Institute of Technology	Donald Graham Research Assistant in Electrical Engineering Massachusetts Institute of Technology
Arthur R. Bergen* Associate Professor of Electrical Engineering University of California (Berkeley)	Charles E. Dryden Professor of Chemical Engineering The Ohio State University	Robert S. Green Associate Dean of the College of Engineering Executive Director of the Engineering Experiment Station The Ohio State University
Leonard Z. Breen Professor of Sociology Purdue University	Oliver C. Dunn*§ Associate Director of the Purdue University Libraries	Robert L. Halfman*† Professor of Aeronautics and Astronautics Massachusetts Institute of Technology
G. Wayne Brown Professor of Mechanical Engineering University of California (Berkeley)	Charles E. Elliott, III Instructor in Linguistics and English The University of Michigan	David C. Hazen Professor of Aeronautical Engineering Princeton University



Gene E. Hayner<sup>§</sup>  
Technical Assistant  
The Ohio State University

Harry D. Huskey\*  
Professor of Mathematics and  
Electrical Engineering  
University of California (Berkeley)

Robert A. Huttenback\*<sup>§</sup>  
Assistant Professor of History  
California Institute of Technology

Movses J. Kaldjian\*  
Assistant Professor of Engineering  
Mechanics  
The University of Michigan

John L. Kelley  
Professor of Mathematics  
University of California (Berkeley)

Truman P. Kohman\*  
Professor of Chemistry  
Carnegie Institute of Technology

Ernest B. Leach\*  
Associate Professor of  
Mathematics  
Case Institute of Technology

Peter V. Mason  
Assistant Professor of Electrical  
Engineering  
California Institute of Technology

Jon Mathews  
Associate Professor of Physics  
California Institute of Technology

Percy H. McGauhey\*<sup>§</sup>  
Professor of Sanitary Engineering  
and Public Health, and Director  
of the Sanitary Engineering  
Research Laboratory  
University of California (Berkeley)

George R. Meluch\*  
Head of Circulation Department  
Purdue University Libraries

David Montenegro  
Electronics Technician  
Educational Services  
Incorporated

Burton J. Moyer<sup>‡</sup>  
Professor of Physics  
University of California  
(Berkeley)

John W. Olcott<sup>§</sup>  
Research Technician in  
Aeronautical Engineering  
Educational Services  
Incorporated

Joseph D. Pigott<sup>‡</sup>  
Director of Physical Planning  
and Associate Director of  
Institute Planning  
Case Institute of Technology

Irving N. Rabinowitz\*  
Associate Director of the  
Computer Center  
Princeton University

William F. Schnerer\*<sup>§</sup>  
Associate Professor of Engineering  
Graphics  
Case Institute of Technology

William F. Schreiber  
Associate Professor of Electrical  
Engineering  
Massachusetts Institute of  
Technology

Norton C. Seeber  
Assistant Professor of Economics  
and Industrial Administration  
Carnegie Institute of Technology

William B. Shook  
Assistant Professor of Ceramic  
Engineering  
The Ohio State University

Louis D. Smullin<sup>‡</sup>  
Professor of Electrical Engineering  
Massachusetts Institute of  
Technology

T. B. Speaker<sup>§</sup>  
Consulting Engineer  
Purdue University

John B. Trenholme  
Research Assistant in Electrical  
Engineering  
California Institute of Technology

Jerome E. Vielehr\*  
(Administrative Officer)  
Educational Services Incorporated

David Welch  
Associate Professor of  
Engineering Design  
California Institute of Technology

Gio Wiederhold  
Head of Programming  
Computer Center  
University of California (Berkeley)

Russell J. Wood  
(Architectural Consultant)  
Educational Services Incorporated

Richard H. Zimmerman\*  
Professor of Mechanical  
Engineering  
The Ohio State University

\* Tour completed prior to 1965.

† Promoted during or shortly after return  
from Kanpur.

§ Term of less than one year.

‡ Tour begins in 1965.

# VISITORS TO IIT|kanpur

Observation or inspection trips  
have been made to IIT/Kanpur by:

Shepherd Brooks  
Administrator  
Kanpur Indo-American Program  
Educational Services Incorporated

Gordon S. Brown  
Dean of the School of Engineering  
Massachusetts Institute of  
Technology

Paul F. Chenea  
Chairman of the Steering  
Committee  
Vice President for Academic  
Affairs  
Purdue University

Gilbert Oakley, Jr.  
Vice President of Educational  
Services Incorporated

Others from the Consortium insti-  
tutions who have visited IIT/  
Kanpur are:

Herbert H. Alvord  
Professor of Mechanical  
Engineering  
The University of Michigan

Olaf P. Bergelin  
Educational Services Incorporated  
Program Director, United States  
Engineering Team  
Kabul, Afghanistan

Edward H. Bowman  
Associate Professor of Industrial  
Management  
Massachusetts Institute of  
Technology

Robert F. Goheen  
President  
Princeton University

Harlan H. Hatcher  
President  
The University of Michigan

Roger Heyns  
Vice President for Academic  
Affairs  
The University of Michigan

Howard W. Johnson  
Dean of the  
Alfred P. Sloan  
School of Industrial  
Management  
Massachusetts Institute of  
Technology

H. Victor Neher  
Professor of Physics  
California Institute of Technology

Carroll V. Newsom  
Trustee  
Educational Services Incorporated

Joseph A. Pask  
Professor of Ceramic Engineering  
University of California (Berkeley)

Julius A. Stratton  
President, Massachusetts Institute  
of Technology

Donald M. D. Thurber  
Member of the Board of Regents  
The University of Michigan

John C. Warner  
President, Carnegie Institute of  
Technology

Among those who have come  
from New Delhi are:

Chester Bowles  
United States Ambassador to  
India

M. C. Chagla  
Union Minister for Education  
Government of India

G. K. Chandiramani  
Joint Secretary  
Ministry of Education  
Government of India

John K. Galbraith  
former United States Ambassador  
to India

James Ivy  
The Ford Foundation  
New Delhi

Humanyun Kabir  
former Minister of Scientific  
Research and Cultural Affairs  
Government of India

Asoka Mehta  
Deputy Chairman of the Planning  
Commission  
Government of India

R. P. Padhi  
Joint Secretary  
Ministry of Finance  
Government of India

M. S. Thacker  
Member (Education)  
Planning Commission  
Government of India

C. Tyler Wood  
Minister for Economic Affairs  
and Director  
U.S. AID Mission to India

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