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ENGINEERING MANPOWER COMMISSION, NEW YORK, N.Y.

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DESCRIPTORS- *ANNUAL REPORTS, *ENGINEERING TECHNICIANS, *ENGINEERING, *EMPLOYMENT STATISTICS, *ENGINEERS, *SCIENTIFIC MANPOWER, DIRECTORIES, FINANCIAL SUPPORT, PROFESSIONAL ASSOCIATIONS, PHYSICAL SCIENCES, SALARIES, SCIENTISTS, ENGINEERING MANPOWER COMMISSION, ENGINEERS JOINT COUNCIL,

THE COMMISSION'S PROGRAM, SUPPORTED LARGELY BY CONTRIBUTIONS FROM INDUSTRY, CONSISTS OF (1) COLLECTION, ANALYSIS, AND PUBLICATION OF SIGNIFICANT DATA ON ENGINEERING MANPOWER, (2) COOPERATION WITH THE MILITARY TO ASSURE UTILIZATION OF CRITICAL MANPOWER IN THE BEST NATIONAL INTEREST, AND (3) COMMUNICATION WITH THE PUBLIC ON MATTERS OF THE IMPORTANCE OF ENGINEERING TO THE NATIONAL WELFARE. REPRESENTED AMONG THE COMMISSIONERS FOR 1967 ARE 24 PROFESSIONAL SOCIETIES. GENERAL OPERATIONS FOR THE 1967 YEAR ARE EXPLAINED. IN THE SECTION ENTITLED "PROMOTING THE EFFECTIVE UTILIZATION OF ENGINEERS IN THE NATIONAL INTEREST," DISCUSSED ARE ACTIVITIES OF EMC RELATIVE TO (1) COMMISSION INFLUENCE RELATIVE TO CHANGES IN THE DRAFT LAW, (2) MILITARY MANPOWER DEVELOPMENT BULLETINS, (3) WORKSHOPS ON SELECTIVE SERVICE PROBLEMS, AND (4) CONTACTS WITH, AND SERVICES TO, OTHER ORGANIZATIONS. UNDER THE HEADING "DEVELOPING AND EVALUATING INFORMATION ON THE SUPPLY, DEMAND, AND COMPENSATION OF ENGINEERS," THE 1967 SURVEYS ARE BRIEFLY REVIEWED. THEY ARE (1) PROFESSIONAL INCOME OF ENGINEERS, 1966-1967, (2) SPECIAL SALARY REPORTS, (3) SALARIES AND INCOME OF ENGINEERING TEACHERS, 1966, (4) PROSPECTS OF ENGINEERING GRADUATES, 1967, (5) TRENDS IN ENGINEERING TECHNICIAN ENROLLMENTS AND GRADUATES, AND (6) ENGINEERING AND TECHNICIAN ENROLLMENTS, 1967. DISCUSSED UNDER THE HEADING "ESTABLISHING PUBLIC UNDERSTANDING OF ENGINEERING AND ITS IMPORTANCE TO THE NATIONAL ECONOMY" ARE (1) THE FOUR ENGINEERING MANPOWER BULLETINS, (2) THE 11 ISSUES OF SCIENTIFIC-ENGINEERING-TECHNICAL MANPOWER COMMENTS, (3) ARTICLES IN PUBLIC MEDIA, (4) JOURNALS IN WHICH EMC MATERIALS APPEARED, (4) CAREER GUIDANCE INFORMATION, (5) THE JUNIOR ENGINEERING TECHNICAL SOCIETY, (6) CONGRESSIONAL, GOVERNMENTAL, CIVIC, PROFESSIONAL AND EDUCATIONAL GROUPS, AND (7) COOPERATION WITH INTERNATIONAL GROUPS. THIS DOCUMENT IS ALSO AVAILABLE FROM THE ENGINEERING MANPOWER COMMISSION, 345 EAST 47TH STREET, NEW YORK, NEW YORK 10017. (DH)

ANNUAL REPORT 1967

ENGINEERING MANPOWER COMMISSION
of Engineers Joint Council
345 East 47th Street
New York, New York 10017

February 1968

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Introduction

The Engineering Manpower Commission was organized in 1951 as part of Engineers Joint Council. Its Commissioners in 1967 represented twenty-four professional engineering societies. The Commission serves as a focus for action on national technological manpower problems. Commissioners are appointed because of their professional standing and experience in education, industry, and government.

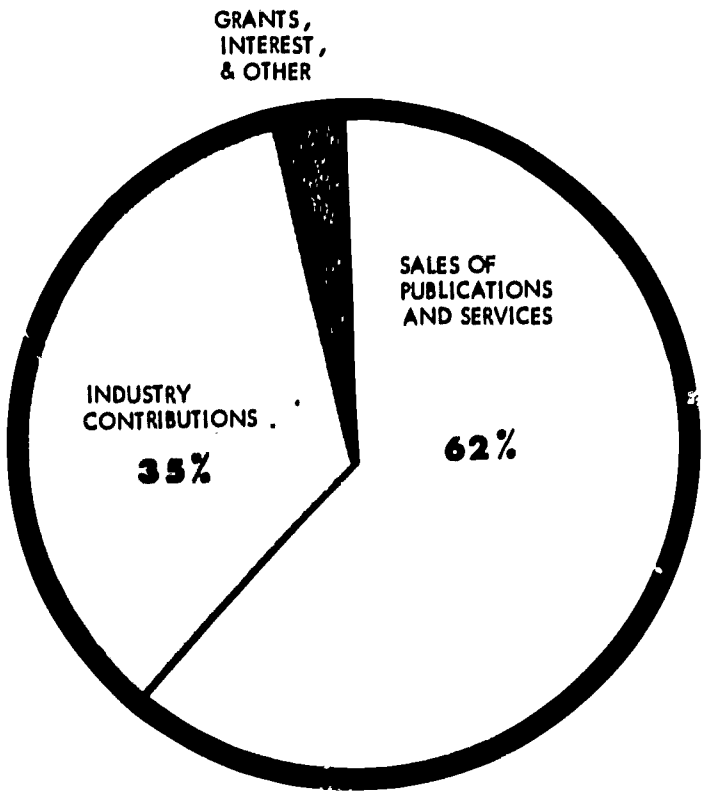
The Commission's program is carried out through the collection, analysis, and publication of significant data on engineering manpower, cooperation with Selective Service and military officials to assure the utilization of critical manpower in the national interest, and the development of programs and policies designed to acquaint the public with the importance of engineering to the national welfare.

The Engineering Manpower Commission maintains a close working liaison with its counterpart among the scientific societies, the Scientific Manpower Commission. In areas of mutual concern, joint programs are carried out.

Both the Engineering and the Scientific Manpower Commissions are supported in substantial part by contributions from industry, obtained by a joint annual campaign for funds.

General Operations

The Engineering Manpower Commission started 1967 with a planned budget of $83,300. During the year it was decided that the Commission's activities should be expanded by the publication of a series of special salary reports tailored to meet the specialized needs of industrial employers. Several other projects were undertaken which had not been specifically budgeted, because it was apparent that the interests of the engineering community and the public required immediate action. To support these new activities, a major campaign was carried out to broaden the base of EMC's industry contributions. This succeeded in adding 36 new supporters to our roster.



The major increase in income, however, came from increased sales of publications and services. This source, which provided 48% of our income in 1966, was raised to 62% in 1967. The additional income went directly into providing additional services and publications during the year, as well as making up last year's deficit. All areas of EMC's work saw increased activity. As a measure of such activity, more than 1,700 letters were written and 1,400 telephone calls handled during the year.

The full Commission met five times in 1967. The January meeting, held at the United Engineering Center, featured a talk by Mr. Frank Coss on the supply and demand situation and its effect on the recruitment of engineers.

In March the College Placement Council gave an on-line demonstration of its GRAD system for matching applicants with job openings. Representatives from the EJC member societies were invited to be present.

For May, EMC hosted the annual joint meeting with the Scientific Manpower Commission at the Biltmore Hotel. Four distinguished speakers discussed areas where the scientific and engineering community faced critical problems in its relationships with society and with the natural environment. The proceedings of this meeting were published as a special report "Critical Interfaces for Engineers and Scientists."

The September meeting was devoted to an address by General Lewis B. Hershey on changes in the draft picture brought about by the Military Selective Service Act of 1967. This meeting was opened to interested individuals from companies, educational institutions, and professional societies connected with EMC activities, and 95 people attended.

In December the Commission met at the Engineers' Club for informal discussions with a Department of Defense official on the problems of improving the utilization of technical manpower in the military services.

The 1966 Commissioners and officers were all asked to serve an additional year to assure continuity in the program during implementation of changes in the constitution and organization of Engineers Joint Council. The only changes in membership for 1967 were replacements for Commissioners who resigned during the year.

Our activities in 1967 demonstrated that an increased level of service not only was desired by the engineering community but also could be supported by the increased income it brought in. Further expansion of the Commission's program will be the subject of special attention in the coming year.

Promoting the Effective Utilization of Engineers in the National Interest

1. SELECTIVE SERVICE AND MILITARY

Changes in the draft law were responsible for an expansion of activities in this area in 1967. Draft calls, although lower than in 1966, continued to produce manpower problems for many employers and educators. The Engineering Manpower Commission staff provided advice and assistance in several hundred cases, and also was invited to testify before the House Committee on Armed Services in connection with the new legislation.

Because of widespread charges of inequity in the draft, both the House and the Senate passed bills in which there was no longer any provision for occupational deferments. EMC took the position that this nation's strength is dependent upon its superior utilization of technology to offset the greater resources of raw manpower available to other countries, and that failure to utilize our scarce supply of technical manpower to meet both military and essential civilian needs would be detrimental to the national interest. Provision for occupational deferments, under greatly tightened rules, was restored to the Military Selective Service Act of 1967 by last-minute action of a joint Senate-House committee. EMC has continued its liaison with all government agencies responsible for implementation of the new law.

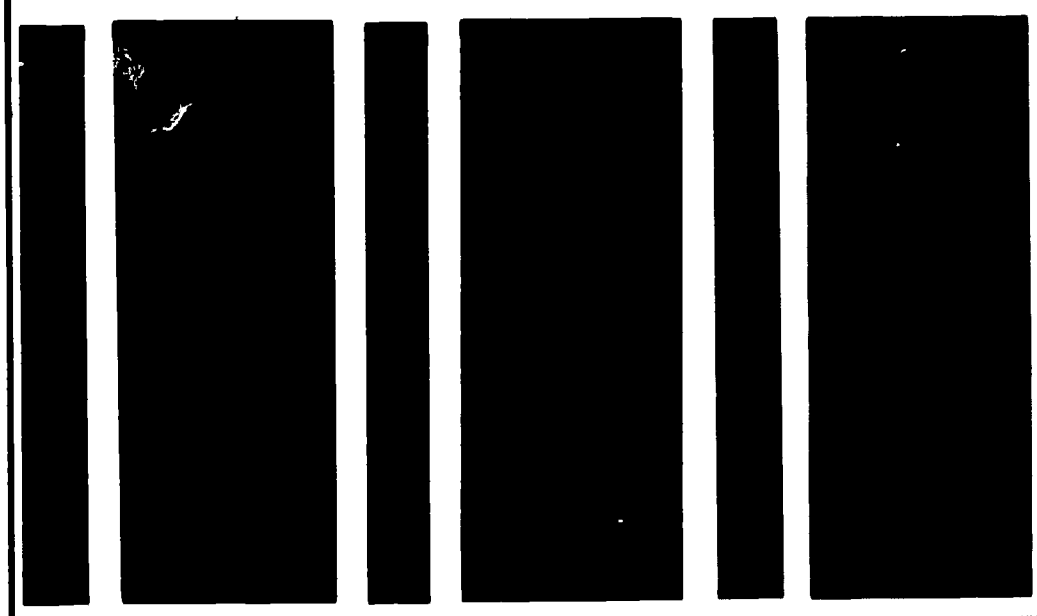
Our handbook "Selective Service and Military Policies on Classification, Deferment, and Delay" was completely revised on the basis of the 1967 law and published in its third edition in October.

Because of the continued importance of keeping employers and educators informed on the rapidly changing military situation, our Subscription Service on Selective Service and Military Manpower Developments was continued for another year. As of the end of the year 35 releases had been mailed to over 350 subscribers. Complimentary subscriptions also went to all our industrial supporters and EJC member societies.

Workshops on Selective Service problems and procedures were held jointly with the Scientific Manpower Commission in Dallas, San Francisco, and Chicago during January. Additional workshops may be held when the new draft provisions have been fully clarified, if it appears that there is sufficient demand for them.

selective service and military policies on

CLASSIFICATION, DEFERMENT, AND DELAY



a handbook published by the
ENGINEERING MANPOWER COMMISSION
of Engineers Joint Council

THIRD EDITION

LLETIN NUMBER 7
May, 1967

This is the seventh in a series of Bulletins designed for leaders in industry, government, and education, whose responsibility includes an awareness of developments in engineering manpower. The Bulletins attempt to present important data or significant trends within the confines of a document which can be read quickly. In this issue we report the results of a survey just conducted by the Engineering Manpower Commission of Engineers Joint Council among employers who are particularly involved in manpower problems related to the draft.

JOHN D. ALDEN, *Executive Secretary*
Engineering Manpower Commission
of Engineers Joint Council

How Changes in The Draft Will Affect Employers

The Engineering Manpower Commission of Engineers Joint Council was founded in 1950 to help resolve manpower problems brought about by the Korean conflict. Since then EMC has maintained close touch with the Selective Service System and military on the one hand and employers on the other to keep aware of potential problems and to assist in solving them when they become real.

With the increased involvement in Vietnam, military manpower problems have inevitably arisen again. In 1965 EMC published its popular handbook, *Classification, Deferment, and Delay*, and released *Employer's Inventory of Critical Manpower*, for the purpose of alerting employers to the Selective Service procedures for deferring essential personnel in the national interest. In mid-1966 a subscription service on Selective Service and military manpower developments was started. Then in late 1966 and January 1967 EMC, in conjunction with its counterpart the Scientific Manpower Commission, conducted a series of employer's workshops on draft problems in which top officials of state and national Selective Service headquarters participated.

When proposals for major changes in the Selective Service System began to be seriously considered, it was apparent that EMC was in touch with a unique group of employer representatives; men and women who knew the Selective Service System in detail and had first-hand ex-

The Commission also has maintained contact with the Department of Defense to explore ways in which the utilization of technical manpower might be improved. A study was made of the number of engineering graduates currently serving in the armed forces, and the results were published as Engineering Manpower Bulletin Number 9. This revealed that about 38,000 engineers were on active duty, and that an imbalance existed between the numbers needed at various degree levels and those actually on board.

2. CONTACTS WITH OTHER GROUPS

The Executive Secretary of the Engineering Manpower Commission was invited in April to speak to the U. S. Department of Labor Committee on Specialized Personnel on the subject of the demand for engineers and technicians as measured by the EMC survey. He also visited the U. S. Office of Education and the Office of the Assistant Secretary of Defense for Manpower, and attended the National Service Conference on matters related to the utilization of engineers.

Following continued discussions with the College Placement Council, EMC arranged a demonstration of that organization's computerized job matching service, GRAD, to the engineering societies. At this time CPC offered to open its system to all engineering society members of full professional standing, whether or not they were otherwise eligible to participate through their local college placement office. In November the Commission asked its parent organization, EJC, to accept this offer on behalf of all society members. In addition to providing a useful service to individual engineers, EMC felt that the GRAD system could improve manpower utilization by reducing time lost in recruiting and job seeking during periods of employment transition.

Developing and Evaluating Information on the Supply, Demand, and Compensation of Engineers

1967 survey activities dealt with several new areas in addition to a continuation of EMC's regular series of surveys. The following work was accomplished:

1. PROFESSIONAL INCOME OF ENGINEERS -- 1966-67

This report was published in June as the seventh in the series started in 1951.

2. SPECIAL SALARY REPORTS

Additional computer analysis was made of the data received in the 1966 survey, leading to detailed reports for the aerosapce, chemical, consulting, electrical, machinery, mining and petroleum, research, and utilities industries. Another breakdown was made by geographical region. The results of these analyses were published experimentally as a series of nine special reports. Reception by employers has been most encouraging, and a continuation of this type of report is planned for 1968.

3. SALARIES AND INCOME OF ENGINEERING TEACHERS -- 1966

This report is being prepared under a grant from the National Science Foundation. Dr. Harold A. Foecke, Dean of Engineering at Gonzaga University, has been retained to write the report, which will be published as soon as possible.

4. PROSPECTS OF ENGINEERING GRADUATES -- 1967

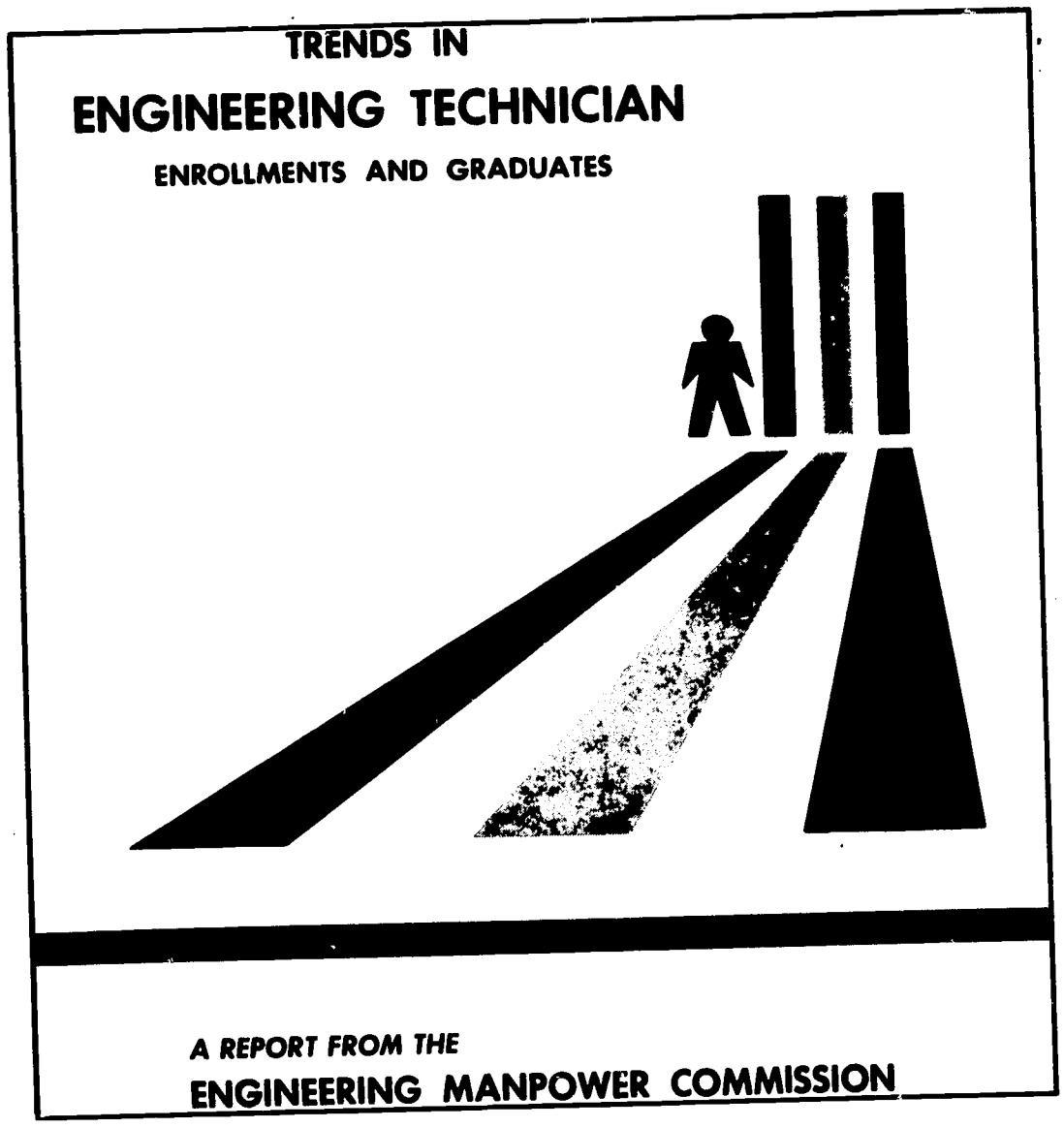
The regular placement survey was expanded somewhat to include graduates of associate and bachelor's degree programs in engineering technology, and to obtain an estimate of the June graduating class. The report was published in October. It revealed that the proportion of graduates going directly on to advanced degree studies had leveled off at about 25%, as was suspected in the 1966 survey. The report also showed that graduates in engineering and technology were enjoying an unprecedented demand for their services.

5. TRENDS IN ENGINEERING TECHNICIAN ENROLLMENTS AND GRADUATES

This publication, issued in July, reported the results of our survey for 1965-66 and 1966-67 plus several chapters of analysis of trends in this field of education. It has helped to bring this rapidly growing subject into better focus for employers and educators alike.

6. ENGINEERING AND TECHNICIAN ENROLLMENTS, FALL 1967

On being informed that the U. S. Office of Education would no longer provide the annual reports of engineering enrollments and degrees it had been publishing since 1945, the Engineering Manpower Commission authorized a special survey of engineering and technician enrollments in September and degrees in June. The enrollment survey was completed in December and results will be published in January 1968.



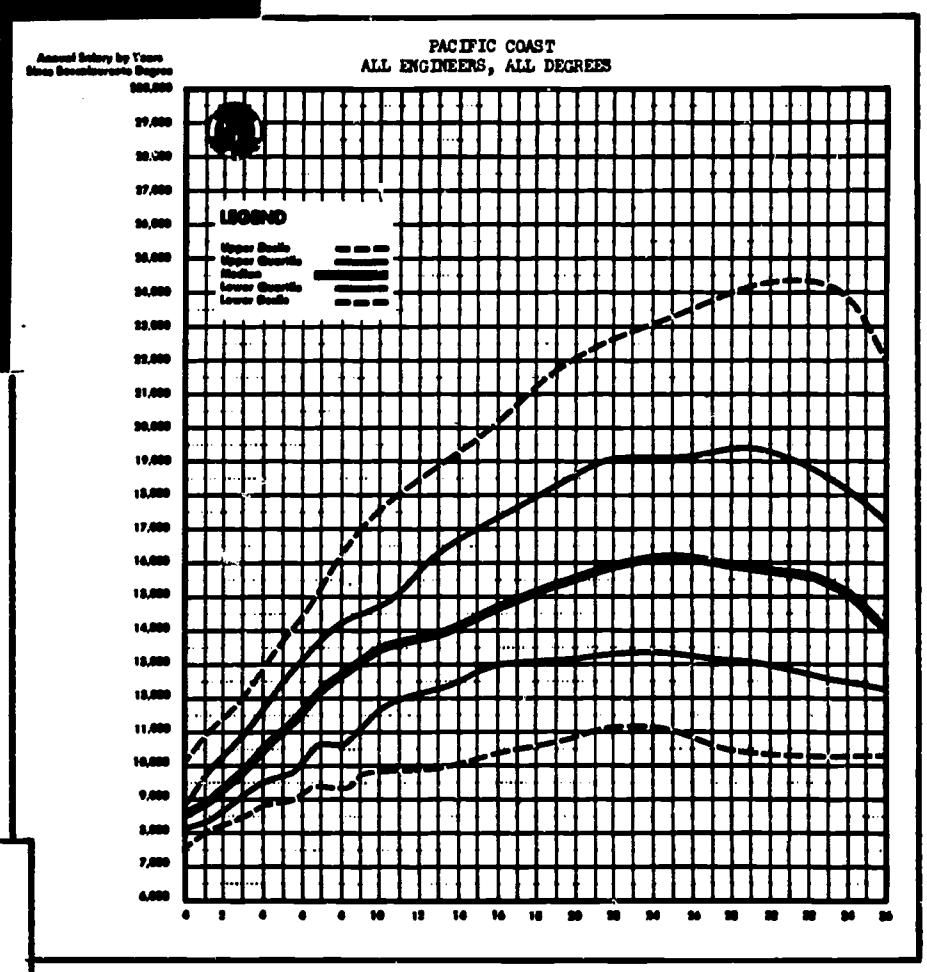
Results of 1966-67 Technician Enrollment Survey

Type of Institution and Curriculum	Full-Time Students			Part-Time Students			All Students		
	Fall Term 1966 Enrollments		Graduating 1966-67	Fall Term 1966 Enrollments		Graduating 1966-67	Fall Term 1966 Enrollments		Graduating 1966-67
	New	Total	(Estimated)	New	Total	(Estimated)	New	Total	(Estimated)
ECPD Accredited									
Engineering Tech.	10,148	19,639	5,808	1,620	4,865	336	11,768	24,504	6,144
Industrial Tech.	2,211	4,055	1,679	1,803	2,907	382	3,294	6,962	2,061
Non-Accredited									
Engineering Tech.	18,401	32,953	8,616	9,977	22,359	1,685	28,378	55,312	10,301
Industrial Tech.	12,655	22,958	8,389	5,988	13,280	3,302	18,643	36,238	11,691
All Institutions									
Engineering Tech.	28,549	52,592	14,424	11,597	27,224	2,021	40,146	79,816	16,445
Industrial Tech.	14,866	27,013	10,068	7,071	16,187	3,684	21,937	43,200	13,752

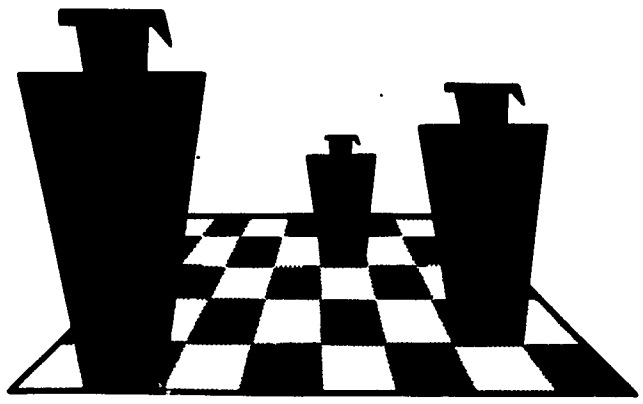
ENGINEERING

SALARIES

SPECIAL
INDUSTRY
REPORT

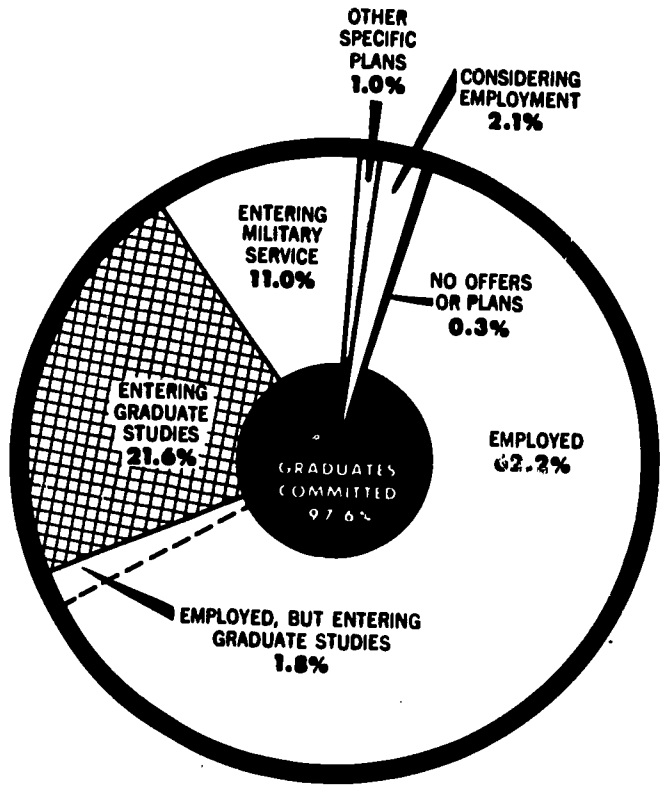


Prospects of Engineering Graduates 1967



a survey conducted by the
ENGINEERING MANPOWER COMMISSION
OF ENGINEERS JOINT COUNCIL

Placement Status of
Engineering Graduates - 1967



Establishing Public Understanding of Engineering and Its Importance to the National Economy

1. ENGINEERING MANPOWER BULLETIN

Bulletin 6, issued in April, was a detailed analysis of the prospective supply of engineering graduates to 1974. This bulletin was so much in demand that two reprints have been necessary.

Bulletin 7 in May reported the findings of a survey of the anticipated impact of the draft on industry and educational institutions. The results were also furnished to congressional and other groups concerned with Selective Service policies.

Bulletin 8 was released in September with figures on the June graduating class. An interesting finding was that 21% of engineering degrees are apparently awarded at other times than June.

Bulletin 9 of December reported on engineers in the armed services. Based on official Department of Defense statistics, it revealed that there are 38,000 graduate engineers in uniform --- more than an entire year's graduating class and about 6% of the entire profession. Despite these large numbers, the services reported a shortage of men with graduate degrees needed to fill specialized engineering needs in the armed forces.

2. SCIENTIFIC-ENGINEERING-TECHNICAL MANPOWER COMMENTS

This publication is prepared by the Scientific Manpower Commission staff on behalf of both Commissions. Eleven regular issues were published in 1967 to a circulation of almost 1,500.

3. ARTICLES IN PUBLIC MEDIA

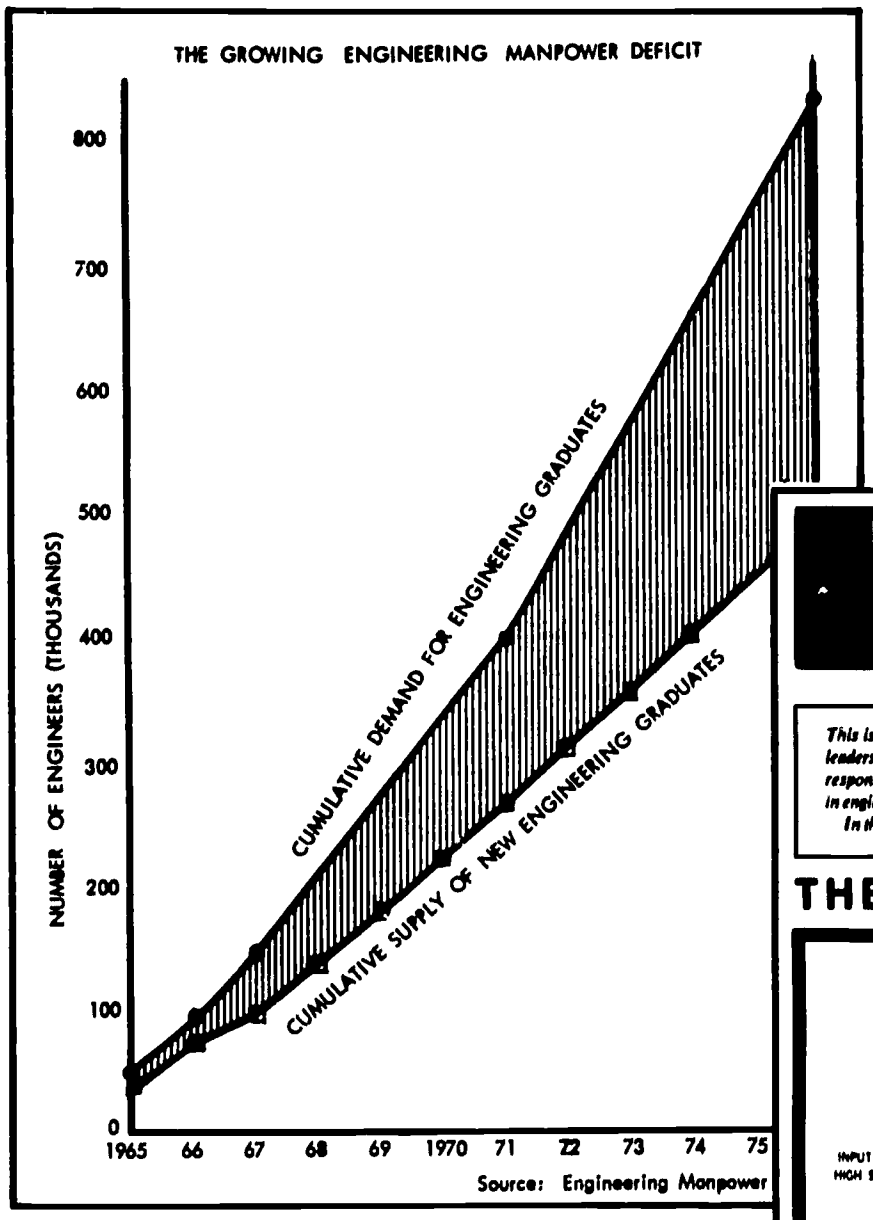
The following articles written by the Executive Secretary were published in 1967:

"Look to Engineering," PROJECT MAGAZINE, July-August, 1967.

"A Realistic Salary Policy for Mining Industry Engineers," MINING CONGRESS JOURNAL, September 1967.

"Engineers' Pay Checks," SCIENCE AND TECHNOLOGY, November, 1967.

"A Close, Close Look at Salaries," CHEMICAL ENGINEERING PROGRESS, November, 1967.



[redacted]LLETIN NUMBER 6

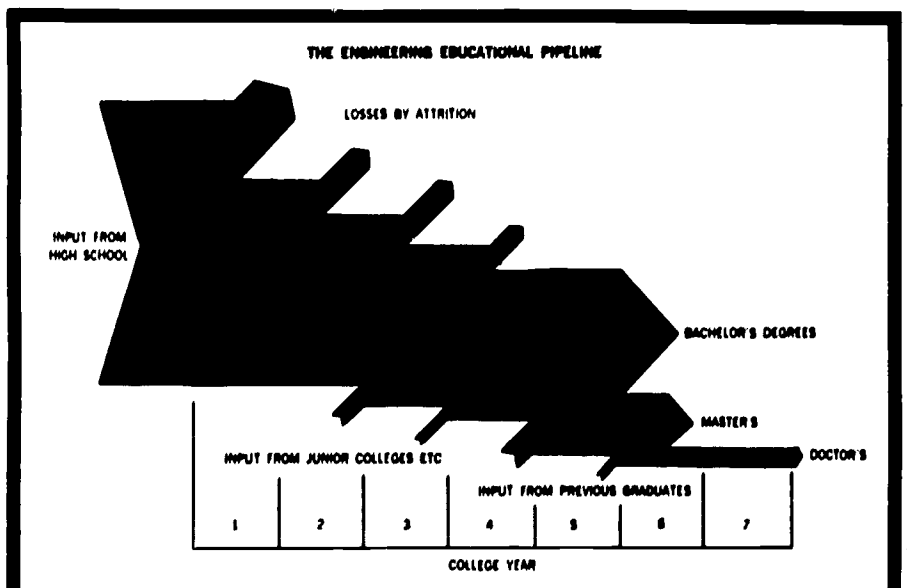
April, 1967

This is the sixth in a series of Bulletins designed for leaders in industry, government, and education whose responsibility includes an awareness of developments in engineering manpower.

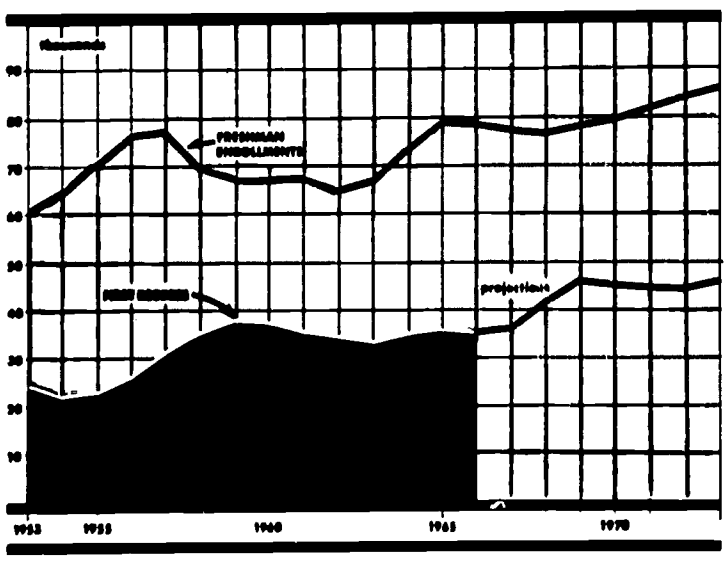
In this issue are presented some statistics and trends showing how the supply of new graduate engineers will probably develop over the next few years.

JOHN D. ALDEN, Executive Secretary, Engineering Manpower Commission of Engineers Joint Council

THE FUTURE SUPPLY OF ENGINEERS



Engineering Freshman Enrollments and First Degrees



In addition, over 100 reviews and announcement of our reports appeared in the technical press. The following nationally known journals were among those giving prominent coverage to EMC material:

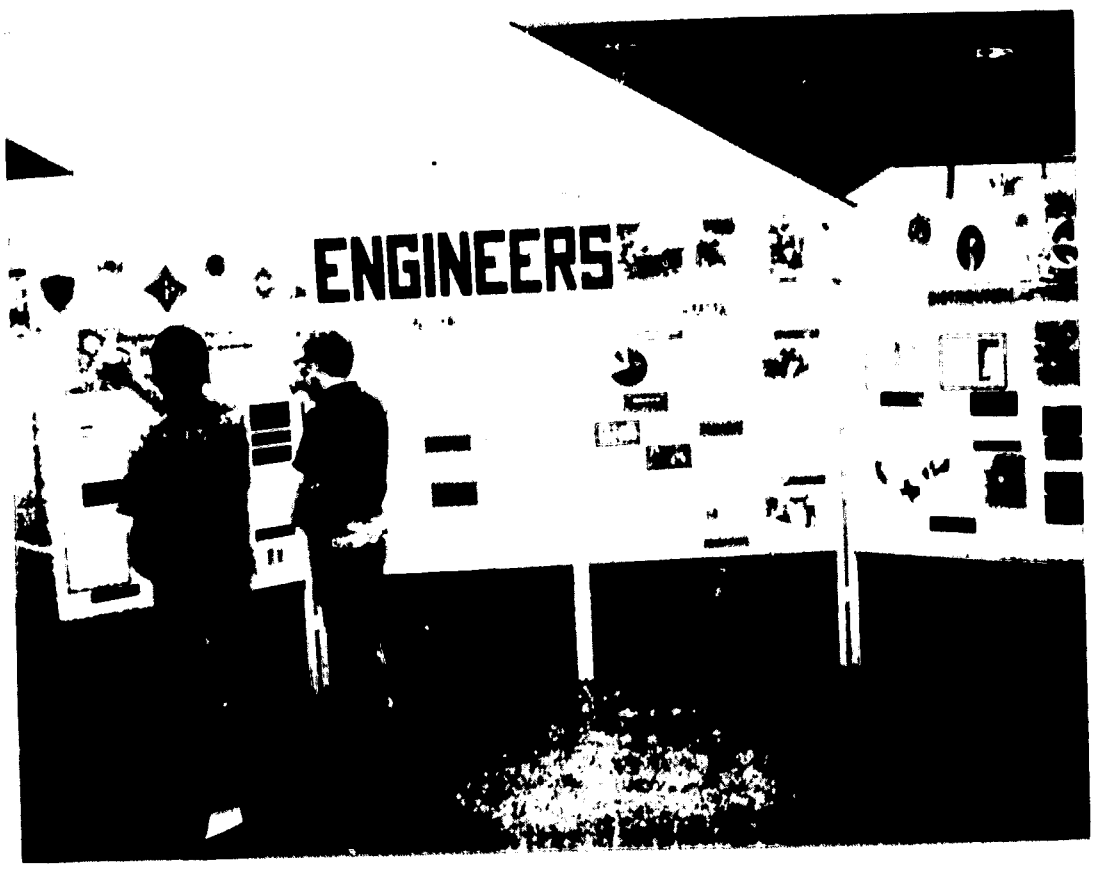
U. S. News and World Report
Chemical Engineering Progress
Journal of Engineering Education
IEEE Spectrum
Business Management
Product Engineering
Machine Design
Mechanical Engineering
Journal of Petroleum Technology
Civil Engineering
Experimental Mechanics
The American Engineer
Recruiting Trends
The Chemist
Nation's Business
JETS Journal
IEEE Student Journal
E D N
Chemical Engineering
Industrial Research
Design News
Gas Age
Chemical and Engineering News
Telephone Engineer and Management
Steel
The Military Engineer
Agricultural Engineering
The Tool and Manufacturing Engineer
Technical Societies News
PM Report
Instrumentation Technology
Technology Week
Assembly Engineering
Automation
ASHRAE Journal
Technical Education News
The Electronic Engineer
The MTS Memo
Naval Engineers Journal
Industrial Relations News
Electro-Technology
Finishers' Management
Boston Herald Traveler
Product Finishing
AIPE Newsletter
Electrical World
Higher Education and National Affairs
Technology Review
Engineer
Alert

4. CAREER GUIDANCE INFORMATION

The Engineering Manpower Commission staff filled about 2,850 requests from students and counselors for information on engineering during 1967. Guidance literature sent out consisted of material published by the Engineers' Council for Professional Development and a bibliography of the booklets available from engineering societies describing their special fields. Two editions of this bibliography were distributed to a list of 1,200 guidance counselors, teachers, and libraries. Bulk copies were provided for a number of special programs. The picture on the facing page shows an attractive display of engineering guidance material sponsored by a local group.

Close liaison has been maintained with the staff of the Engineers' Council for Professional Development and its guidance committee. Materials and activities are coordinated to avoid conflict or duplication of effort.

The Executive Secretary spoke before a group of young people in Brooklyn under the auspices of Aspira, Inc., an organization devoted principally to helping students of Puerto Rican origin. In March he addressed the IEEE Student Branch Counselors at their meeting in New York. He also spoke to the freshman class in engineering at the University of New Hampshire in November as part of that school's program of professional development for its students.



5. JUNIOR ENGINEERING TECHNICAL SOCIETY

The Commission works closely with JETS through its Chairman, who is a member of the JETS Board of Directors. One other Commissioner is also currently serving on this board. The Commission is pleased to note that the operations of JETS have been substantially strengthened during this year and that it has established close organizational ties with ECPD in guidance activities.

6. CONGRESSIONAL, GOVERNMENTAL, CIVIC, PROFESSIONAL AND EDUCATIONAL GROUPS

Engineering Manpower Commission commissioners and staff met with a number of such groups or provided information on engineering manpower as requested. A typical activity is the review of advance copies of material published by other groups to assure the accuracy of statements about engineering. Assistance of this kind was provided, for example, to the United States Department of Labor in connection with its Career Opportunities Handbook. Other meetings have been mentioned elsewhere in this report.

7. PARTICIPATION IN OTHER ACTIVITIES

Individual Commissioners have taken part in a variety of engineering society and community affairs. Among others, Commissioner Malcolm Pirnie, Jr. was elected to the Board of Directors of the American Society of Civil Engineers, and Commissioner Arthur Weber was elected president of the Engineers' Council for Professional Development for 1968. Commissioners Pirnie, Carleton, Weber and Gilman were named by their societies to the EJC General Assembly.

The Executive Secretary was invited to speak at a number of meetings, including the following:

ASME local chapter meeting at Huntsville, Alabama, on the subject of engineers salaries.

Coal Mining Division meeting of the American Mining Congress at Pittsburgh, on the employment of engineers in that industry.

American Society for Metals national congress at Cleveland, symposium on the education and employment of engineering technicians.

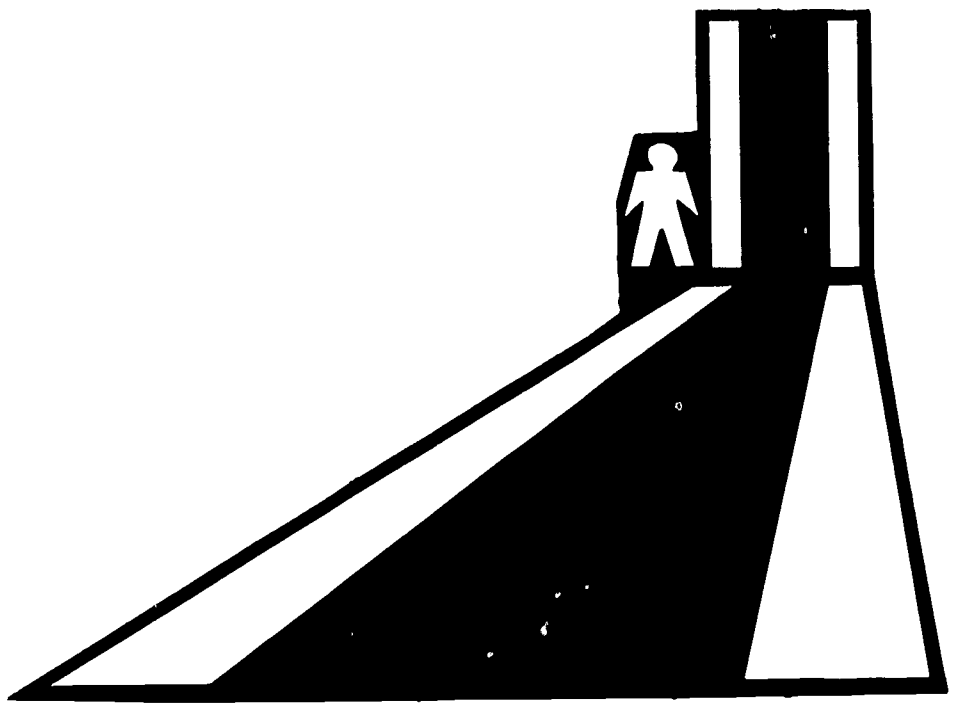
Long Island Section of ASME, Management Division, dinner meeting, on the subject of engineering salaries.

June meeting of Engineering Associates in New York, to report on results of the EMC salary survey.

8. COOPERATION WITH INTERNATIONAL GROUPS

During 1967, representatives of engineering groups in Norway, Great Britain, and Finland visited EJC and engaged in extended discussions of its manpower activities with a view toward establishing similar programs in their own countries. Publications are exchanged with groups in several other countries and with the Organization for Economic Cooperation and Development as a means of keeping informed on engineering manpower activities elsewhere.

Work was started on a guidebook for engineers coming to this country from abroad, to help acquaint them with professional activities in the United States. Dean Willard P. Berggren of the University of Bridgeport has been retained to prepare this publication.



Vita

1. PURPOSE

The Engineering Manpower Commission of Engineers Joint Council is charged with the following responsibility:

> "To engage in studies and analyses of the supply, demand, and utilization of engineering and technical manpower; to make recommendations, conduct programs, and develop reports concerning these aspects of engineering and technical manpower; and to carry on such other programs in the field of manpower as may be authorized by the Board of Directors of EJC."

2. EJC SOCIETIES AND EMC COMMISSIONERS - 1967

Officers and Executive Staff:

Chairman . . . . . Clifford H. Doolittle

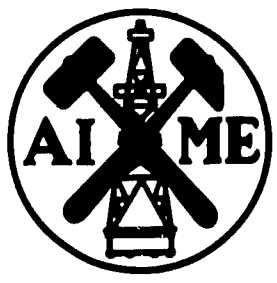
Vice-Chairman . . . . . Donald E. Irwin

Executive Secretary . . . . . John D. Alden

Military and Legislative Advisor . . . .Brig. Gen. C. S. Dargusch

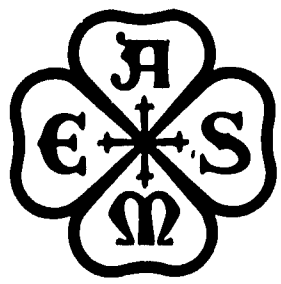
AMERICAN SOCIETY OF CIVIL ENGINEERS
345 E. 47th Street, New York, N. Y. 10017
founded 1852

EMC Commissioners:
Marcel P. Aillery
LeRoy A. Brothers
Howard G. Dixon



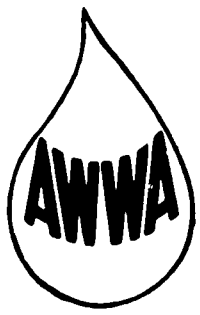
AMERICAN INSTITUTE OF MINING, METALLURGICAL, AND PETROLEUM ENGINEERS
345 E. 47th Street, New York, N. Y. 10017
founded 1871

EMC Commissioners:
Douglas Munroe
Douglas Ragland



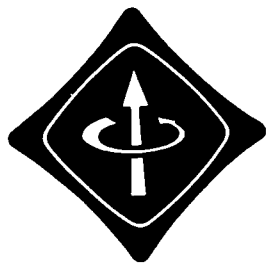
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
345 E. 47th Street, New York, N. Y. 10017
founded 1880

EMC Commissioners:
H. Russell Beatty
William M. Hoyt
Arthur Weber



AMERICAN WATER WORKS ASSOCIATION
2 Park Avenue, New York, N. Y. 10016
founded 1881

EMC Commissioners: George J. Natt
Malcolm Pirnie, Jr.



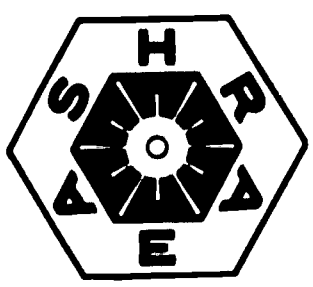
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
345 E. 47th Street, New York, N. Y. 10017
founded 1884

EMC Commissioners: Ralph I. Cole
Sydney B. Ingram
George E. Moore

THE AMERICAN SOCIETY FOR ENGINEERING EDUCATION
2100 Pennsylvania Avenue, N.W., Washington, D. C. 20037
Washington, D. C.
founded 1893

EMC Commissioners: William T. Alexander
Walter M. Hartung
William Hazell

Alternates: Jesse W. Mason
J. L. McGraw
Frederick H. Roever



AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS
345 E. 47th Street, New York, N. Y. 10017
founded 1894

EMC Commissioners: S. F. Gilman
Clifford F. Holske

AMERICAN SOCIETY FOR TESTING AND MATERIALS
1916 Race Street, Philadelphia, Pa. 19103
founded 1898

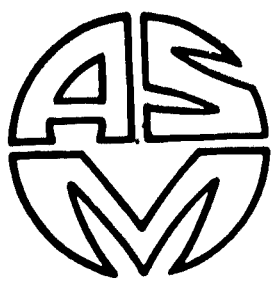
EMC Commissioners: None appointed in 1967

AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS
420 Main Street, St. Joseph, Michigan 49085
founded 1907

EMC Commissioners: Donald P. Brown
Walter M. Carleton
Hugh J. Hansen

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS
345 E. 47th Street, New York, N. Y. 10017
founded 1908

EMC Commissioners: Theodore J. Carron
Donald B. Keyes
Charles L. Mantell



AMERICAN SOCIETY FOR METALS
Metals Park, Ohio 44073
founded 1913

EMC Commissioners: Adolph J. Lena
William M. Mueller
A. D. Schwope

THE SOCIETY OF AMERICAN MILITARY ENGINEERS

The Fleming Building, 800 17th Street, N.W., Washington, D. C. 20006
founded 1920

EMC Commissioners: Col. Richard T. Batson
Col. Robert F. Schirmer
Col. James D. Strong

THE AMERICAN INSTITUTE OF INDUSTRIAL ENGINEERS

345 E. 47th Street, New York, N. Y. 10017
founded 1948

EMC Commissioners: Clifford H. Doolittle
William J. Vallette

AMERICAN INSTITUTE OF CONSULTING ENGINEERS

345 E. 47th Street, New York, N. Y. 10017
founded 1910

EMC Commissioners: James J. Pilliod
Harold S. Woodward

AMERICAN INSTITUTE OF PLANT ENGINEERS

1056 Delta Avenue, Suite 11, Cincinnati, Ohio 45208
founded 1954

EMC Commissioner: James C. McClymont

AMERICAN ASSOCIATION OF COST ENGINEERS

University of Alabama, Post Office Box 5199,
University, Alabama 35486
founded 1956

EMC Commissioners: Arthur F. Dershowitz
William H. Patterson

NATIONAL INSTITUTE OF CERAMIC ENGINEERS

4055 N. High Street, Columbus, Ohio 43214
founded 1938

EMC Commissioner: H. D. Bixby

SOCIETY OF WOMEN ENGINEERS

345 E. 47th Street, New York, N. Y. 10017
founded 1952

EMC Commissioner: Helen V. Armstrong

SOCIETY OF FIRE PROTECTION ENGINEERS

60 Batterymarch Street, Boston, Massachusetts 02110
founded 1950

EMC Commissioner: Martin M. Brown

AIR POLLUTION CONTROL ASSOCIATION

4400 Fifth Avenue, Pittsburgh, Pennsylvania 15213
founded 1907

EMC Commissioners: None appointed in 1967

SOCIETY FOR NONDESTRUCTIVE TESTING

914 Chicago Avenue, Evanston, Illinois 60202
founded 1941

EMC Commissioner: D. W. Ballard

INSTRUMENT SOCIETY OF AMERICA

530 William Penn Place, Pittsburgh, Pennsylvania 15219
founded 1945

EMC Commissioner: Allen E. Lee

AMERICAN SOCIETY FOR QUALITY CONTROL

Plankinton Building, Room 6185, 161 West Wisconsin Avenue,
Milwaukee, Wisconsin 53203
founded 1946

EMC Commissioner: E. C. Torkelson

Commissioners at Large, appointed by the President of EJC:

Donald E. Irwin
George D. Lobingier
Donald C. Metz
R. A. Whitehorne

Advisors:

Donald S. Bridgman
Richard C. Fremon
W. Scott Hill
M. H. Trytten

3. SUPPORTING CORPORATIONS

The following companies provided financial assistance for the 1967 program of the Commission:

ADM Chemicals
Abbott Laboratories
Addressograph-Multigraph Corp.
Alabama Power Co.
Alcoa Foundation
Allegheny Ludlum Steel Corp.
Amerada Petroleum Corp.
American Can Co.
American Cyanamid Co.
American Electric Power Service Corp.
American Metal Climax
American Oil Co.
American Smelting & Refining Co.
American Telephone & Telegraph Co.
Anaconda Co.
Armco Steel Corp.
Armstrong Cork Co.
Atchison, Topeka & Santa Fe Railway
Austin Co.
Bell Telephone Laboratories, Inc.
Bethlehem Steel Corp.
Black & Decker Manufacturing Co.
Black & Veatch
E. W. Bliss Co.
Bodine Electric Co.
Boeing Co.
Borg Warner - York Division
Budd Co.
Carrier Corp.
Caterpillar Tractor Co.
Celanese Corp.
Central Hudson Gas & Electric Co.
Central Illinois Public Service Co.
Chandler Evans Corp.
Clark Equipment Co.
Cleveland-Cliffs Iron Co.
Colt Industries, Inc.
Columbia Gas System Service Corp.
Continental Can Co.
Control Data Corp.
Cooper Bessemer Co.
Copper Range Co.
Corn Products Co.
Cosmodyne Co.
Cummins Engine Foundation
Cutler Hammer, Inc.
Dames and Moore
Dayton Power & Light Co.
Delavan Manufacturing Co.
Delmarva Power & Light Co.
Detroit Edison Co.
Diamond Alkali Co.
Dorr Oliver, Inc.
Dow-Corning Corp.
Dravo Corp.
Dresser Industries, Inc.
E. I. du Pont de Nemours & Co., Inc.
Eastman Kodak Co.
Eaton-Yale and Towne, Inc.
Ebasco Services, Inc.
Frank W. Egan & Co.
Electric Storage Battery Co.
Esso Research & Engineering Co.
Ethyl Corp.
FMC Corp.
J. L. Faisant & Co.
Ford Motor Co.
Foxboro Co.
Freeport Sulphur Co.
Friden, Inc.

General Aniline & Film Corp.
General Dynamics Corp.
General Electric Co.
General Foods Corp.
General Mills, Inc.
General Motors Corp.
General Radio Corp.
General Telephone & Electronics Corp.
Georgia Power Co.
Gillette Co.
Globe Industries, Inc.
Goss Co.
W. R. Grace & Co.
Greeley and Hansen
S. J. Groves & Sons Co.
Grumman Aircraft Engineering Corp.
Gulf Power Co.
Harbison-Walker
Harley-Davidson Motor Co.
Frederic R. Harris Co.
Harris-Intertype Co.
Harshaw Chemical Co.
Hartford Electric Light Co.
Hecla Mining Co.
Hercules Inc.
Homestake Mining Co.
Honeywell, Inc.
Hughes Aircraft Co.
Hyster Co.
Illinois Central Railroad
Illinois Power Co.
Inland Steel Co.
International Business Machines Corp.
International Harvester Co.
International Telephone & Telegraph Co.
Interstate Power Co.
Iowa-Illinois Gas & Electric Co.
Jackson & Moreland, Inc.
Johns-Manville Corp.
Al Johnson Construction Co.
Johnson's Wax
Jones & Laughlin Steel Corp.
Kendall Refining Co.
Kennecott Copper Corp.
Koppers Co.
Litton Industries, Inc.
Litton Industries - Amecom Division
Lockheed Aircraft Co.
Long Island Lighting Co.
Lubrizol Corp.
Lummus Co.
Mallinckrodt Chemical Works
Marquardt Corp.
Matson Navigation Co.
McDonnell Douglas Corp.
McGraw-Hill Publishing Co.
Mead Corp.
Mechanical Handling Systems, Inc.
Merck & Co.
Mine Safety Appliances Co.
Mississippi Power Co.
Mobil Oil Co., Inc.
Monsanto Co.
Montana Power Co.
National Distillers & Chemical Corp.
National Starch & Chemical Corp.
Newmont Mining Corp.
New Orleans Public Service, Inc.
Newport News Shipbuilding & Dry Dock Co.
Nooter Corp.
North American Aviation Co.
Ohio Edison Co.
Olin Mathieson Chemical Corp.
Outboard Marine Corp.
Owens-Corning Fiberglas Corp.
Owens-Illinois Glass Co.
Panhandle Eastern Pipeline Co.
Parke Davis & Co.
Pennsylvania Power & Light Co.
Chas. Pfizer & Co., Inc.
Phelps-Dodge Corp.
Pittsburgh Plate Glass Co.

Potash Company of America
Potlatch Forests, Inc.
Potomac Electric Power Co.
Procter & Gamble Co.
Public Service Electric & Gas Co.
Radio Corporation of America
Raytheon Co.
Republic Steel Corp.
Robbins & Myers, Inc.
Rochester Gas & Electric Corp.
Rockwell Manufacturing Co.
Rohm & Haas Co.
Rust Foundation
St. Joseph Lead Co.
Sandia Corp.
Sargent and Lundy
Schering Corp.
Shell Oil Corp.
Sperry Rand Corp.
Philip Sporn
Square D Co.
Standard Oil -- California
Standard Oil of Ohio
Standard Pressed Steel Co.
Stauffer Chemical Co.
Stearns-Roger Corp.
Sun Oil Co.
Sverdrup & Parcel & Associates, Inc.
Texas Instruments, Inc.
Toledo Edison Co.
Trane Co.
Tudor Engineering Co.
Turner Construction Co.
Union Carbide Corp.
Union Oil Company of California
United Aircraft Corp.
United Engineers & Constructors, Inc.
United Gas Corp.
United Shoe Machinery Co.
United States Rubber Co.
United States Steel Co.
Upjohn Co.
Virginia Chemicals, Inc.
Virginia Electric & Power Co.
West Virginia Pulp & Paper Co.
Western Electric Co.
Westinghouse Electric Corp.
Wisconsin Electric Power Co.
Woodward Governor Co.
Worthington Corp.
Xerox Corp.
Yarway Corp.