

*The
University of Illinois Department
of Mechanical Engineering*

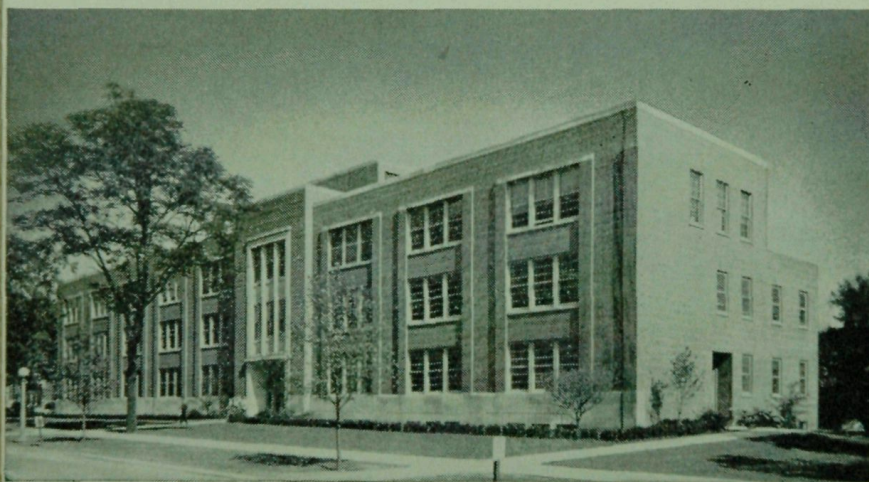
invites you to attend the

**DEDICATION OF THE
MECHANICAL
ENGINEERING BUILDING**

Friday, May 12

Saturday, May 13

1950



HELD CONCURRENTLY WITH THE
MIDWESTERN CONFERENCE
ON FLUID DYNAMICS

AND MEETING OF THE
AMERICAN PHYSICAL SOCIETY
FLUID DYNAMICS DIVISION

University of Illinois, Urbana

Program for the Dedication of

THE MECHANICAL
ENGINEERING
BUILDING

*all times indicated
are central daylight
saving time*

FRIDAY, MAY 12

8:00 REGISTRATION
Mechanical Engineering Building

9:00 OPEN HOUSE AND CONDUCTED TOURS

12:00 WELCOME LUNCHEON

Illini Union Ballroom

Welcome — WILLIAM L. EVERITT, Dean of the College of Engineering; Director of Engineering Experiment Station, University of Illinois

Address — *The Development of Mechanical Engineering Education and Research at the University of Illinois* — OSCAR A. LEUTWILER, Professor of Mechanical Engineering Design, Emeritus, University of Illinois

Address — *The Aims and Objectives of the Department of Mechanical Engineering at the University of Illinois* — NORMAN A. PARKER, Professor and Head of the Department of Mechanical Engineering, University of Illinois

2:00 OPEN HOUSE AND CONDUCTED TOURS

4:00 FORMAL DEDICATION of new building, Room 112, Gregory Hall

Chairman — ARTHUR CUTTS WILLARD, President and Professor of Heating and Ventilating, Emeritus, University of Illinois

Action of Board of Trustees — KENNEY E. WILLIAMSON, President of the Board of Trustees, University of Illinois

Response — COLEMAN R. GRIFFITH, Provost, University of Illinois

Address — *Engineering Education and Industry* — ANDREY A. POTTER, Dean of Engineering, Purdue University

Address — *The Engineer's Civic Responsibilities* — JAMES D. CUNNINGHAM, President of American Society of Mechanical Engineers, 1950; President, Republic Flow Meters Company

7:00 DEDICATION BANQUET (INFORMAL)

Illini Union Ballroom

Toastmaster — LOUIS N. RIDENOUR, Dean of the Graduate College, University of Illinois

Address — *Engineering Opportunities and Inhibitions* — CHARLES F. KETTERING, Director and Research Consultant, General Motors Corporation

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SATURDAY, MAY 13

9:00 OPEN HOUSE AND CONDUCTED TOURS

12:30 REUNION LUNCHEON

Illini Union Ballroom

Chairman — CARL H. CASBERG, Professor of Mechanical Engineering; Chairman, Department of Mechanical Engineering Building Committee

Address — *The Building Program of the University of Illinois* — WHITNEY C. HUNTINGTON, Professor and Head of the Department of Civil Engineering; Chairman, Building Program Committee, University of Illinois

Special Program for Women

A special program is arranged for women guests on Friday, May 12. The registration desk is located in the main lobby of the Mechanical Engineering Building and will be open from 8 to 11 in the morning.

Special buses will be provided on Friday morning at 11 to take the women to Robert Allerton Park of the University of Illinois. A luncheon and an afternoon program are arranged, including a conducted tour of the formal gardens and exhibits of the Robert Allerton Park. The buses will return by 6 in the evening, in time for the Dedication Banquet, for those who plan to attend. Reservations for transportation and luncheon must be made by May 1.

Invitation

You are cordially invited to attend the technical sessions of the Midwestern Conference on Fluid Dynamics and the meetings of the Fluid Dynamics Division of the American Physical Society. Please refer to the program shown on the following pages . . .

Programs for

MIDWESTERN CONFERENCE
ON FLUID DYNAMICS

AND MEETING OF THE
AMERICAN PHYSICAL SOCIETY
FLUID DYNAMICS DIVISION

Session A

AERODYNAMICS

Friday Morning

ROOM 110 M.E.

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Sessions A, B, and C
9:00 a.m. to 12:00 noon

Session **A**

AERODYNAMICS — EXTERNAL FLOW

Friday Morning, May 12

ROOM 110 M.E. BLDG.

9:00 Chairman — H. S. STILLWELL, Head of Aeronautical Engineering Department, University of Illinois

9:10-9:50 *Some Aspects of Boundary Layer Transition and Flow Separation* — A. N. KUETHE, Professor, University of Michigan; Chief Scientist, Office of Air Research, U. S. Air Force, Dayton, Ohio

10:00-10:20 *The Ring Doublet in Ideal Fluid Flow* — V. L. STREETER, Professor and Director, Fundamental Research in Mechanics, Illinois Institute of Technology

10:30-10:50 *On the Extension of Isotropic Theories of Turbulence to Compressible Fluids* — M. Z. E. KRZYWOBLOCKI, Professor, University of Illinois

11:00-11:10 *On Certain Particular Solutions of the Laminar Boundary Layer Equations* — A. N. TIFFORD, Professor, Ohio State University

11:20-11:30 *On the Solutions of Chaplygin's Equation by Means of Kummer's Formula* — P. N. MATHUR, Research Assistant, T.A.M. Department, University of Illinois

12:00-2:00 WELCOME LUNCHEON — Illini Union Ballroom

Sessions A, B, and C are held concurrently on Friday, May 12, at 9:00 a.m. to 12:00 noon.

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THE
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DIVISION

Session B

MECHANICAL ENGINEERING — INTERNAL FLOW

Friday Morning, May 12

ROOM 253 M.E. BLDG.

9:00 Chairman — J. H. POTTER, Professor of Mechanical Engineering, University of Illinois

9:10–9:50 *The Problem of the Flow Through Turbo-machines* — W. SPANNHAKE, Senior Research Scientist, Armour Research Foundation

10:00–10:20 *Analysis of Some Thermodynamic Processes with the Method of Characteristics for Non-Steady One-Dimensional Flow* — H. H. KORST, Associate Professor, University of Illinois

10:30–10:50 *Action of Friction in Non-Steady Flow of Fluid* — N. A. HALL, Professor, University of Minnesota

11:00–11:10 *Theory of the Adiabatic Bubble* — R. SCORAH, Chairman, Department of Mechanical Engineering, University of Missouri

11:20–11:30 *Compressible Flow Through Sharp-Edged Orifices* — R. G. CUNNINGHAM, Research Assistant, Northwestern University

11:40–11:50 *Approximate Theory of Compressible Air Inflow Through Reed Valves for Pulse-Jet Engines* — P. TORDA, Associate Professor, University of Illinois

12:00–2:00 WELCOME LUNCHEON — Illini Union Ballroom

Sessions A, B, and C are held concurrently on Friday, May 12, at 9:00 a.m. to 12:00 noon.

Session C

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Sessions A, B, and C at 9:00 a.m. to 12:00 noon.

Session C

FLUID DYNAMICS DIVISION
OF THE AMERICAN
PHYSICAL SOCIETY

SYMPOSIUM ON HYPERSONIC AND
LOW-DENSITY FLOW TECHNIQUES

Friday Morning, May 12

ROOM 218 M.E. BLDG.

9:00 Chairman — J. H. BARTLETT, Professor,
Physics Department, University of Illinois

9:10-9:30 *Results of Recent Hypersonic Flow Re-
search in the Army Ordnance-California
Institute of Technology Hypersonic Wind
Tunnel* — H. J. NAGAMATSU, California
Institute of Technology

9:35-9:55 (*Subject to be announced*) — V. J. STEVENS,
NACA, Ames Aeronautical Laboratory

10:00-10:20 *Recent Research at the Naval Ordnance
Laboratory on Hypersonic Flow* — R.
SMELT, Naval Ordnance Laboratory

10:25-10:45 (*Subject to be announced*) — L. LEES,
Princeton University

10:50-11:10 *The Effect of Thermal Radiation on Hy-
personic Flow in Wind Tunnels and Free
Flight* — H. G. STEVER, Massachusetts In-
stitute of Technology

11:15-11:35 *Some Experiments in the Field of Rarefied
Gas Dynamics* — R. G. FOLSOM and S. A.
SCHAAF, University of California

Sessions A, B, and C are held concurrently on Friday, May 12, at
9:00 a.m. to 12:00 noon.

Session D

JOINT MEETING OF AMERICAN PHYSICAL SOCIETY, FLUID DYNAMICS DIVISION, AND MIDWESTERN CONFERENCE ON FLUID DYNAMICS

ADDRESSES ON TURBULENCE AND AERO-PHYSICS

Friday Afternoon, May 12

ROOM 112 GREGORY HALL

2:10 Chairman — L. N. RIDENOUR, Dean of the Graduate College, University of Illinois

2:20-3:00 The Turbulence Problem Today — H. L. DRYDEN, Director National Advisory Committee for Aeronautics, Washington, D. C.

3:10-3:50 On Aero-Physics Research, R. SEEGER, Chief of Aeroballistics, Navy Ordnance Laboratory, White Oak

4:00 FORMAL DEDICATION OF MECHANICAL ENGINEERING BUILDING (See page 4)

5:30 DISCUSSION ON THE FUTURE PROGRAM OF THE MIDWESTERN CONFERENCE — Illini Union — Faculty Lounge
Chairman — G. L. VON ESCHEN, Ohio State University

7:00 DEDICATION BANQUET (See page 4)

Session E

ASTRO-PHYSICAL MATHEMATICS, FLUID DYNAMICS, M

Saturday Morning

ROOM 110 M.E.

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9:10-9:50 A of

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Sessions E, F, G, and at 9:00 a.m. to 12:10

Session E

**ASTRO-PHYSICS, COMPUTING MACHINES,
MATHEMATICAL THEORY OF FLUID
DYNAMICS, METEOROLOGY**

Saturday Morning, May 13

ROOM 110 M.E. BLDG.

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9:00 Chairman — D. G. BOURGIN, Professor,
Department of Mathematics, University of
Illinois (pro tem)
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9:10-9:50 *A Theory of the Stability of Shock Waves*
— T. Y. THOMAS, Chairman, Department
of Mathematics, Indiana University
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10:00-10:20 *A Sampling Method for Computing Flows
Through Semi-Permeable Membrane* — A.
H. TAUB, Professor, University of Illinois
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10:30-10:50 *Turbulence in Magneto-Hydrodynamics* —
S. CHANDRASEKHAR, Professor, University
of Chicago
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11:00-11:20 *A Method for Constructing Correlation
Tensors in Isotropic Turbulence* — N.
COBURN, Professor, University of Michigan
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11:30-11:50 *Recent Work in Numerical Prediction of
Atmospheric Motion* — GEORGE PLATZMAN,
University of Chicago
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12:00-12:10 *Application of Conformal Mapping to
Divided Flow* — J. S. McNOWN, Professor
and Research Engineer (Speaker); and
EN-YUN HSU, Research Associate, Iowa
Institute of Hydraulic Research, State Uni-
versity of Iowa
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Sessions E, F, G, and H are held concurrently on Saturday, May 13,
at 9:00 a.m. to 12:10 p.m.

Session F

CHEMICAL ENGINEERING

Saturday Morning, May 13

ROOM 218 M.E. BLDG.

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9:00 Chairman — H. F. JOHNSTONE, Professor,
Chemical Engineering Department, Uni-
versity of Illinois
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9:10-9:50 *Some Uses of the Mechanics of Similitude
in Pilot Plant Experimentation* — J. H.
RUSHTON, Professor, Illinois Institute of
Technology
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10:00-10:30 *Velocity Profiles in Annuli* — J. G. KNUD-
SEN, Professor, University of Oregon; and
D. L. KATZ, Professor, University of Michi-
gan (Speaker)
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10:40-11:00 *Impact Tube Measurements in Isothermal
Air Jets* — J. F. TAYLOR, Research Assist-
ant, University of Illinois; and E. W.
COMINGS, Professor, University of Illinois
(Speaker)
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11:10-11:30 *Application of the Reichard Equation* —
T. BARON, Professor, University of Illinois
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11:40-11:50 *Surface Velocities of Liquid Films in the
Streamline Flow Region* — M. L. JACKSON,
Professor, University of Colorado (Speak-
er); and R. T. JOHNSON and N. H.
CEAGLSKE, Professors, University of Min-
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Sessions E, F, G, and H are held concurrently on Saturday, May 13,
at 9:00 a.m. to 12:10 p.m.

Session G

**HYDRAULICS
EXTERNAL A**

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Sessions E, F,
at 9:00 a.m. to

Session **G**

**HYDRAULICS AND CONTINUATION OF
EXTERNAL AND INTERNAL FLOW**

Saturday Morning, May 13

ROOM 253 M.E. BLDG.

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9:00 Chairman — J. J. DOLAND, Professor, Civil Engineering Department, University of Illinois

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9:10-9:50 *Turbulence in the Mississippi River* — J. B. TIFFANY, JR., Special Assistant to the Director of the U. S. Waterways Experiment Station, Vicksburg, Mississippi

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10:00-10:20 *Pressure Distribution on Three-Dimensional Building Models* — J. W. HOWE, Head, Department of Mechanics and Hydraulics, State University of Iowa

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10:40-11:00 *Experimental Techniques for Investigating the Flow Through a Series of Identical Blades* — R. C. BINDER, Professor, Purdue University

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11:10-11:30 *Wind Tides in Large Bodies of Water* — H. L. LANGHAAR, Professor, University of Illinois

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11:40-11:50 *Experiments on Fluid Systems Combining Convection and Rotation and Some of Their Possible Implications* — D. FULTZ, Professor, University of Chicago

ay, May 13,

12:00-12:10 *Determination of Hydraulic Characteristics of Separating Chambers* — A. C. INGER-SOLL, Project Assistant, Hydraulic and Sanitary Laboratory, University of Wisconsin

Sessions E, F, G, and H are held concurrently on Saturday, May 13, at 9:00 a.m. to 12:10 p.m.

Session H

FLUID DYNAMICS DIVISION OF THE AMERICAN PHYSICAL SOCIETY

CONTRIBUTED PAPERS

Saturday Morning, May 13

ROOM 100 PHYSICS BLDG.

- 9:00 Chairman — A. T. NORDSIECK, Professor,
Physics Department, University of Illinois
- 9:10–12:00 Contributed Papers
- 9:10–9:20 *Transonic Flow Measurements* — WAYLAND C. GRIFFITH,
Princeton University
- 9:25–9:35 *Diffraction of a Shock Wave Through a Small Angle* —
C. H. FLETCHER, Princeton University
- 9:40–9:50 *Diffraction of Shock Waves Around, and Surface Pressure
on Two-Dimensional Objects* — W. BLEAKNEY and D. R.
WHITE, Princeton University
- 9:55–10:05 *Supersonic Flow in a Shock Tube* — DAVID WEIMER,
Princeton University
- 10:10–10:20 *Breaking of Waves by an Opposing Current* — YI-YUAN
YU, Northwestern University (Introduced by E. R. Peck)
- 10:25–10:35 *Axially Symmetric Jet Mixing of a Compressible Fluid* —
S. I. PAI, Institute for Fluid Dynamics and Applied
Mathematics, University of Maryland (Introduced by
R. J. Seeger)
- 10:40–10:50 *Aerodynamic Behavior and Interaction of Supersonic and
Subsonic Axially-Symmetric Flows* — BERTRAND DES CLERS
and CHIEH-CHIEN CHANG, Johns Hopkins University
(Introduced by F. H. Clauser)
- 10:55–11:05 *Explicit Representation of the Flow in the Region of
Interaction of Two Arbitrary Simple Waves in One-
Dimensional Compressible Fluid Flow* — R. P. SHAW,
New York University (Introduced by George E. Hudson)
- 11:10–11:20 *Nucleation in Very Rapid Vapor Expansions* — ARTHUR
KANTROWITZ, Cornell University
- 11:25–11:35 *Effect of Variable Viscosity and Thermal Conductivity on
the High Speed Plane Couette Flow of a Semi-Rarefied
Gas* — T. C. LIN, University of Washington (Introduced
by R. E. Street)
- 11:40–11:50 *The Existence and Limit Behavior of the One-Dimen-
sional Shock Layer* — DAVID GILBARG, Indiana University

Sessions E, F, G, and H are held concurrently on Saturday, May 13, at
9:00 a.m. to 12:10 p.m.

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Information

Because of limited accommodations in hotels and dining rooms, reservations for accommodations and for the various banquets must be made before May 10. Reservation forms may be obtained from Professor J. R. Carroll, Jr., Mechanical Engineering Building, University of Illinois, Urbana.

An information center will be located in the lobby of the main floor of the new Mechanical Engineering Building.

For those who drive, specific parking instructions will be given at the information centers. The Mechanical Engineering Building is located on the northeast corner of Green Street and Mathews Avenue, and is near state highway 10 and U. S. highways 45 and 150. The building is about one mile from the Urbana-Lincoln Hotel and about one and one-half miles from hotels in Champaign.

All visitors are invited to enjoy the facilities of the Illini Union Building, one-half block west of the new Mechanical Engineering Building.

Open for Inspection

All visitors are cordially invited to inspect the facilities of the Mechanical Engineering Department, consisting of: (A) The new Mechanical Engineering Building; (B) The Mechanical Engineering Power Laboratory; (C) Mechanical Engineering Foundry; (D) Warm Air Heating Research Residence No. 2, 54 E. Gregory, Champaign; (E) Warm Air Heating Research Residence No. 3, Hill and Lincoln Streets, Urbana; (F) Steam and Water Heating Research Home, 801 W. Green St., Urbana; (G) Floor Slab Laboratory, S. Oak St., Champaign; and (H) Physical Environment Laboratory, Room 119, Mechanical Engineering Laboratory.

SPONSORING SOCIETIES

of the Midwestern Conference on Fluid Dynamics:

American Chemical Society, Illinois Section
American Mathematical Society
American Physical Society, Fluid Dynamics
Division
American Society of Civil Engineers
American Society of Mechanical Engineers,
Applied Mechanics and Hydraulics Division
Institute of the Aeronautical Sciences
Office of Naval Research

The following states were invited to participate actively in
the Midwestern Conference on Fluid Dynamics:

Arkansas	Mississippi
Illinois	Missouri
Indiana	Nebraska
Iowa	North Dakota
Kansas	Ohio
Kentucky	Oklahoma
Michigan	South Dakota
Minnesota	Tennessee
	Wisconsin