

20
HLW:WMH
VI-5

5
99.10
DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS
WASHINGTON

Letter
Circular
LC 191

(January 21, 1926)

BUREAU OF STANDARDS, WASHINGTON
TESTING LABORATORIES
EQUIPPED FOR MECHANICAL TESTS
OF METALS AND OTHER ENGINEERING MATERIALS

7
Compiled by the Engineering Mechanics Section of the Bureau of Standards, from the replies to a questionnaire which was distributed to engineering schools and laboratories and to those who answered an announcement published in the technical periodicals.

The Bureau of Standards, in accordance with law, makes tests and carries out investigations for other government departments. Due to the large amount of this official work, it is impracticable for the Bureau to make tests for private individuals if other laboratories can do the work.

This list has been prepared to inform persons interested, of the location and equipment of other laboratories.

Laboratories which furnish stress-strain curves do so only upon specific request. They either secure these curves from autographic testing machines or plot them from the test data, using instruments to measure the deformation of the specimen.

ALABAMA

Pittsburgh Testing Laboratory, 215 Clark Building, Birmingham.
O. H. Berger, Manager.

Southern Testing Laboratories, Inc., Birmingham.
Branch laboratories: Lakeland, Fla.,
Jacksonville, Fla.

CALIFORNIA

Materials Testing Laboratory, Dept. of Civil Engineering, Univ. of California, Berkeley.

C. Derleth, Professor of Civil Engineering, Director.
 R. E. Davis, Associate Professor of Civil Engineering.
 G. E. Troxell, Assistant " " " " "

No commercial testing unless other laboratories are not suitably equipped.

Can measure deformation and furnish stress curves.

Can prepare test specimens.

EQUIPMENT -- Testing Machines

					Ft.	In.
Universal	-	30,000 lb.	, longest specimen		1	6
"	-	30,000 "	" "	"	6	0
"	-	60,000 "	" "	"	1	6
"	-	100,000 "	" "	"	1	6
"	-	200,000 "	" "	"	5	0
"	-	300,000 "	" "	beam specimen	19	0
Tension	-	10,000 lb.	" "	"	6	6
Compression	-	500,000 lb.	" "	"	15	0
Transverse	-	10,000 lb.	" "	"	2	0
Torsion	-	60,000 lb.in.	" "	"	5	0
Cold Bend	-	Olsen				
Hardness	-	Brinell				
"	-	scleroscope				
Impact	-	Charpy, 233 ft.lb.				
"	-	Hatt-Turner, 1200 ft.lb.				
Fatigue	-	rotating beam				
"	-	Upton-Lewis				

-- Complete machine shop.

-- Complete wood shop.

-- Apparatus for measuring deformation

Extensometers - Ewing 2 inch and 8 inch gage
 - Ewing type (Last Word Dial) 2 in. and 8 in. gage
 - Ames dial, 8 in. and 16 in. gage
 - Two, micrometer screw, electric contact, 8 in. gage.

Compressometers - Olsen micrometer screw, electric contact, 2 in. and 8 in. gage.
 - Ames dial, 6 in. gage.
 - Last Word dial, 8 in. gage.
 - Last Word, three dials, 3 in. gage.

Strain-gage - Berry strain-gage, 2, 8, and 20 in. gage.

- Miscellaneous -- Fiber deformation, Ames dial,
4 by 6 in. beam, 12 in. gage.
- Deflection of beams.
- Troptometer for torsion, 8 in. gage.
- Depth measuring for Birell, Ames dial.

 Charles C. Kavin Co., 693 Mission St., San Francisco, Calif.
 Main office: 431 S. Dearborn St., Chicago, Ill.

Smith-Emery Co., 245 S. Los Angeles St., Los Angeles.

E. O. Slater, Manager. W. C. Bass, Engineer in physical and metallurgical testing. Otto Wartenweiler, Engineer, special investigation and design.

 Can prepare test specimens.

EQUIPMENT -- Testing Machines

 Universal - 100,000 lb.

The Twining Laboratories, 2146--8 Merced St., Fresno.

F. E. Twining. H. C. English. Eland-Casbolt.

 Can measure deformation and furnish stress curves.
 Can prepare test specimens.

EQUIPMENT -- Testing Machines

 Universal - 50,000 lb.

*Other laboratories, see supplement, page 31.

CONNECTICUT

Yale University, Sheffield Scientific School, Sheffield Laboratory of Engineering Mechanics, Prospect St., New Haven.

C. J. Tilden, Professor of Engineering Mechanics. Philip I. Laurson, Ass't Professor of " " " G. W. Colton and T. T. McCrosky, Instructors in Engineering Mechanics.

 * Prefer to determine the mechanical properties of metals.

EQUIPMENT -- Testing Machines

 Universal - (3) 50,000 lb.

Universal - 100,000 lb.
 " - 150,000 "., longest beam 16 ft.
 Tension - 600 lb., for fabrics.
 Transverse - 1,000 lb., for cast iron.
 Hardness - Brinell (Alpha).
 " - scleroscope.
 Fatigue - rotating beam.
 Special - Set of rolls for brass can be used in testing machine to measure roll pressures.

The Henry Souther Engineering Co., 11 Laurel St., Hartford, Conn.

James A. Newlands, President. F. P. Gilligan, Secretary-Treas.

Can measure deformation and furnish stress curves.
 Can prepare test specimens.

Prefer work in connection with manufacturing control on ferrous and non-ferrous metals.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.
 Hardness - Rockwell
 " - scleroscope.

The Stanley P. Rockwell Co., 112 High St., Hartford.
 Engineering Department A.

Stanley P. Rockwell, R. W. Woodward.

Prefer tests of steel to determine cause of unsatisfactory service.

EQUIPMENT -- Testing Machines

Universal - 50,000 lb.
 " - 100,000 lb.
 Hardness - Rockwell.

DELAWARE

Department of Civil Engineering, University of Delaware, Newark.

Professor Howard K. Preston.

Can measure deformation and furnish stress curves.
 Can prepare test specimens.

EQUIPMENT -- Testing Machines

Universal - 30,000 lb.
 " - 100,000 "

DISTRICT OF COLUMBIA

Industrial Research Laboratories, 2301 New York Avenue, N.W.,
 Washington.

Dr. George W. Coggeshall, Director. Arthur Reilly, Chief Chemist.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 150,000 lb.

FLORIDA

Southern Testing Laboratory, Inc., 127 Talleyrand Avenue, Jackson-
 ville, Florida.

W. W. Wood, Manager.

Main Office, Birmingham, Ala. Branch Laboratory, Lakeland, Fla.

Prefer testing of building materials and inspection service.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

*Georgia laboratories, see supplement, page 31.

HAWAII

University of Hawaii, Engineering Laboratory, Honolulu, T. H.

A. R. Keller, Professor of Civil Engineering.

Prefer mechanical tests of metals.

Prefer not to do commercial testing, but as this is the
 only materials testing laboratory in the territory, tests
 are made for government and private organizations.

Can measure deformation and furnish stress curves.

Can prepare test specimens.

EQUIPMENT -- Testing Machines

Universal - 150,000 lb.
 Transverse - 10,000 lb.
 Torsion - 50,000 lb.in.
 Hardness - Olsen.
 Friction - Thurston.

IDAHO

Materials Testing Laboratory, University of Idaho, Moscow.

Ivan C. Crawford, Dean, College of Engineering.

Can prepare test specimens.
 Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 200,000 lb.

ILLINOIS

Armour Institute of Technology, 3300 Federal St., Chicago, Ill.

G. F. Gebhardt, Professor of Mechanical Engineering, Head of Dept.
 P. C. Huntly, Associate Professor of Mechanical Engineering,
 Materials of Engineering.

Can prepare test specimens.
 Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal	-	10,000 lb.	, longest specimen	6 ft.	- tension
			" beam	8 ft.	
"	-	50,000 lb.	, longest specimen	7 ft.	- compression
			" beam	10 ft.	
"	-	60,000 lb.	, longest specimen	2 ft.	tension or
			" beam	10 ft.	compression
"	-	200,000 lb.	, longest specimen	4 ft.	tension or
			" beam	10 ft.	compression
"	-	400,000 lb.	, longest specimen	10 ft.	- compression
			" beam	24 ft.	

Torsion - 4200 lb.in., longest specimen 6 ft.
 Cold Bend - 5000 lb.ft.
 Hardness - Brinell
 " - scleroscope.

Drop - Master Car Builders Machine, 9000 lb., 20 ft. drop.
 Impact - 50 lb., highest drop 5 ft.

Charles C. Kawin Co., Main Laboratory, 431 S. Dearborn St., Chicago

Charles C. Kawin, President. J. Tissing, Secretary and Chief Clerk
 1st.

Branch Laboratories:

- 110 Pearl St., Buffalo, N. Y.
- 222 W. Fourth St., Cincinnati, Ohio.
- 693 Mission St., San Francisco, Calif.
- 156 Yonge St., Toronto, Ont., Canada.

Can make tensile, transverse, and Brinell hardness tests for brass, malleable iron, and cast iron foundries.

R. H. Laverie and Sons, Inc., 431 S. Dearborn St., Chicago.

J. B. Emerson, Vice President. J. W. Davidson, Chemical and Metallurgical Engineer.

Can prepare test specimens.
 Can measure deformation.

EQUIPMENT -- Testing Machines

Universal - 150,000 lb.

*Other laboratories, see supplement, pages 31, 32.

INDIANA

Testing Materials Laboratory, Purdue University, Lafayette.

A. A. Potter, Director, Engineering Experiment Station, and Dean of Schools of Engineering. W. K. Hatt, Director of Laboratory, and Head of the School of Civil Engineering.
 R. B. Crepps, Ass't Professor of Testing Materials, In Charge of Testing Materials Laboratory.

Cannot prepare test specimens.
 Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

- Universal - Several 30,000 lb.
- " - (2) 50,000 lb.
- " - (2) 100,000 lb.
- " - (2) 200,000 lb.
- " - 300,000 lb.

Compression - 150,000 lb.

Torsion - (2) 60,000 lb.in., longest specimen 4 ft.

Hardness - equipment.

Impact - Hatt-Turner, hammer 500 lb., highest fall 10 ft.

*Other laboratories, see supplement, page 32.

IOWA

Patzig Testing Laboratory, 206--210 Eleventh St., Des Moines.

Monroe L. Patzig, Director and Manager. R. G. King, First Ass't.

Prefer tests of engineering and building materials.

Can prepare test specimens.

Can measure deformation

EQUIPMENT -- Testing Machines

Universal - 10,000 lb.

Compression - 300,000 lb.

State University of Iowa, Office of the Dean, College of Applied Science, Iowa City, Iowa.

S. M. Woodwar, General Materials Testing. Edward Barton, Head Dept. of Chemical Metallurgy.

No commercial testing except under exceptional circumstances.

Can measure deformation but cannot furnish stress curves.

Can prepare test specimens.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

Impact - 100 lb.ft.

Engineering Experiment Station, Iowa State College, Ames.

Anson Marston, Director.

No commercial testing unless other laboratories are not suitably equipped.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - Several, 20,000 to 100,000 lb.

" - 200,000 lb., longest compression specimen 6 ft.

Compression - 100,000 lb., for beams.

Additional equipment for wood and other building material, including drain, sewer, and culvert pipe.

KANSAS

Testing Materials Laboratory, University of Kansas, Lawrence.

A. M. Ockerblad, Assistant Professor of Applied Mechanics.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 40,000 lb.

" - (2) 100,000 lb.

" - 200,000 lb., longest transverse specimen 20 ft.

" compression " 16 in.

" tensile " 7 ft.

Torsion - 24,000 lb.in.

Hardness - Brinell.

KENTUCKY

Janes & Breckler, inc., Commercial Building, 107 South Fourth St.,
Louisville.

Wm. E. Janes, President and Chief Chemist. R. A. Dean, Physical
tests.

Can prepare test specimens.

Cannot measure deformation or furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

LOUISIANA

College of Engineering, Tulane University, St. Charles Ave., New
Orleans.

W. B. Gregory, Professor of Experimental Engineering. J. M. Robert
Professor of Machine Design.

Prefer mechanical tests.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

MARYLAND

University of Maryland, Engineering Experiment Station, College Park, Md.

A. N. Johnson, Dean, College of Engineering.

No commercial testing.

Can prepare test specimens.

Can measure deformations and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - (2) 100,000 lb.

Johns Hopkins University, Mechanical Engineering Department, Homewood, Baltimore, Md.

A. G. Christie, Professor of Mechanical Engineering. F. W. Kowenhoven, Instructor in Mechanical Engineering. R. H. Canfield, Instructor in Physics.

Prefer tests of metals.

Can prepare test specimens.

Can measure deformation.

EQUIPMENT -- Testing Machines

Universal - (2) 50,000 lb.

" - 100,000 lb.

Tension - 10,000 lb.

Torsion - 60,000 lb.in.

Apparatus for Measuring Deformation

Berry strain gage, 2, 8, and 20 inches.

MASSACHUSETTS

Arthur D. Little, Inc., 30 Charles River Road, Cambridge.

Arthur D. Little, President. Earl P. Stevenson, Vice President and Director of Research. Roger C. Griffin, Director of Tests

Prefer tests of metals and miscellaneous testing for the industries.

Can measure deformation and furnish stress curves.

Can prepare test specimens.

EQUIPMENT -- Testing Machines

Universal - Machines having capacities up to 1,000,000 lb.
Impact - Charpy.

- - - - -

Mechanical Engineering Laboratory, Worcester Polytechnic Institute, Worcester, Mass.

Professor Francis W. Roys.

- - - - -

Can test ferrous and other metals if the work requires special skill.

EQUIPMENT -- Testing Machines

Universal - 10,000 lb., longest specimen 3 ft.
" - 50,000 "
" - 100,000 "
" - 100,000 Emery hydraulic, longest specimen 10 ft.
" - 400,000 lb., longest specimen 10 ft.,
" beam 20 ft.
Tension - 20,000 lb. Wicksstead, longest specimen 20 in.
Impact - Charpy, 30 Kg.m.

- - - - -

Tufts College Engineering Laboratories, Tufts College, Mass.

Gardner C. Anthony, Dean.

- - - - -

Will make tests for private individuals.

- - - - -

Can test metals, reinforcement for concrete, and wire rope.

- - - - -

EQUIPMENT -- Testing Machines

Universal - 60,000 lb.
" - 150,000 "
Transverse - machine, longest beam 9 ft.

MICHIGAN

The Detroit Testing Laboratory, 554 Bagley Avenue, Detroit.

W. P. Putnam, President and General Manager. P. E. Fuller, Engineer, Mechanical and Electrical Problems.

- - - - -

Can prepare test specimens.
Can measure deformation.

- - - - -

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.
 Tension - 10,000 "
 Hardness - Brinell
 Impact - Izod

Perry Testing Laboratory, 201 Third St., Detroit.

Ralph W. Perry, Director.

Can measure deformation.

EQUIPMENT -- Testing Machines

Universal - 300,000 lb.

*Other laboratories, see supplement, page 32.

MINNESOTA

Minnesota Testing Laboratories, Inc., 318 Glencoe Bldg., Duluth.

Cannot prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

Department of Metallography, School of Mines, University of Minnesota, Minneapolis.

W. R. Appleby, Professor of Metallurgy. Oscar E. Harder, Professor of Metallography.

No commercial testing. Test metals in connection with metallurgical investigations.

Prefer not to prepare test specimens.

Can measure deformation autographically (Amsler) and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 300 Kg. Amsler.

Impact - Charpy, 32 Kg.m.

Hardness - Brinell

" - scleroscope.

*Other laboratories, see pages 32, 33.

MISSOURI (page 13)

Engineering Experiment Station, University of Missouri, 103
Engineering Building, Columbia, Mo.

E. J. McCaustland, Director.

Can make simple tests on building materials.

Kansas City Testing Laboratory, 700 Baltimore Avenue, Kansas City,

Dr. Roy Cross. Dr. Walter M. Cross.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 150,000 lb.

*Other laboratories, see supplement, page 33.

*Montana, see supplement, page 33.

NEBRASKA

Western Laboratories, 132 North 12th St., Lincoln.

Roy M. Green, Manager.

Test materials of construction used in paving.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Compression - 200,000 lb.

NEW JERSEY

Civil Engineering Laboratory, Princeton University, Princeton.

Professor George E. Beggs.

Prefer tests of structural materials.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 150,000 lb.

Torsion - Pendulum.

Container Testing Laboratory, Inc., Rockaway.

Robert J. Ellis, President and Chief Engineer. Charles J. Zusi, Vice President and Assistant Chief Engineer. Herbert F. Finck, Engineer in charge of tests.

Tests made on any kind of shipping container or shipping container accessory, such as fiber board containers, wooden cases, plywood boxes, wirebound boxes, wooden crates, and metal binding materials.

Can prepare test specimens.
Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 5,000 lb., longest specimen 72 in.
Revolving drums - 7 ft. diameter, largest specimen 15 cu.ft.
600 lb.
" " - 14 ft. diameter, largest specimen 170 cu.ft.
1200 lb.
Drop - highest drop 10 ft., largest specimen 1200 lb.
Paper - Mullen Tester, 600 lb.
" - Webb Tester, 600 lb.

NEW MEXICO

New Mexico College of Agriculture and Mechanic Arts, Materials Testing Laboratory, State College, New Mexico.

R. W. Goddard, Dean of Engineering. Harvey O. Garst, Professor of Civil Engineering.

Can prepare test specimens.
Can measure deformation and prepare stress curves.

EQUIPMENT -- Testing Machines

Universal - 65,000 lb.
" - 200,000 lb.

NEW YORK

George F. Comstock, 167 Harrison Avenue, Niagara Falls.

Prefers tensile testing in connection with metallographic investigations on difficult or unusual problems.

Can prepare test specimens.
Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

Hardness - scleroscope
 Impact - Izod, 400 lb.ft.
 " - Frenot, 60 Kg.m.
 " - Landgraf-Turner, alternating impact.
 Fatigue - White Souther.

Rensselaer Polytechnic Institute, Troy, N. Y.

Professor T. R. Lawson, Materials Testing Laboratory.

Can prepare test specimens.
 Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 10,000 lb., 50,000 lb., 60,000 lb., 100,000 lb.,
 150,000 lb., 300,000 lb., 600,000 lb.
 Compression - 1,200,000 lb., hydraulic.
 Torsion - 125,000 lb.in.
 Hardness - Brinell
 Impact - Charpy, 125 Kg.m.
 Fatigue - White Souther.

Department of Experimental Engineering, College of Engineering,
 Sibley School of Mechanical Engineering, Cornell University,
 Ithaca, N. Y.

H. Diederichs.

Can prepare test specimens.
 Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 150,000 lb., 1,000,000 lb.
 Tension - 3,000,000 lb.
 Transverse - 10,000 lb.
 Torsion - 200,000 lb.in.
 Impact - Charpy-Izod, 120 Kg.m.
 Fatigue - Upton Lewis.

Materials Testing Laboratory, Cooper Union, New York City.

F. E. Foss, R. C. Brumfield.

Can prepare test specimens.
 Can measure deformation and furnish stress curves.

Can prepare test specimens.
Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.
Impact - machine.

Columbia University Testing Laboratories, Department of Civil Engineering, Broadway and 116th St., New York City.

A. H. Beyer, Associate Professor of Civil Engineering, Director.
Wm. J. Krefeld, Assistant Professor of Civil Engineering,
Engineer of Tests.

Prefer mechanical tests on structural materials.

Can prepare test specimens.
Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - Several machines, largest 400,000 lb.
Torsion - 60,000 lb.in.

Apparatus for Measuring Deformation

Large number of extensometers and strain gages.

Electrical Testing Laboratories, 80th St. and East End Avenue,
New York City.

Preston S. Millar, General Manager. Clayton H. Sharp, Technical Director. F. M. Farmer, Chief Engineer. E. S. Boegehold, Mechanical Engineer, Mechanical Tests.

Can prepare test specimens.
Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 17,000 lb., 20,000 lb., 40,000 lb., 200,000 lb.
Tension - 600 lb.
Torsion - 210,000 lb.in.

Stillman and Van Siclen, Chemical Laboratory Co., Inc., 227 Front Street, New York City.

Irving Hochstader, President and Treasurer. R. C. Brumfield, Cooper Union, Associate in Mechanical Engineering. Samuel Newmark, in charge of laboratory.

Test building materials.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - (2) 20,000 lb., longest specimen 3 ft.
" beam 30 in.

" - (5) 50,000 lb.

" - 100,000 lb.

" - 200,000 lb., longest specimen 10 ft.
" beam 20 ft.

Tension - 2,500 lb.

Compression - 200,000 lb.

Transverse - 10,000 lb. (

" for cast iron.

Torsion - 60,000 lb.in.

Hardness - Brinell

" - scleroscope.

Impact - Turner-Hatt.

Fatigue - Upton Lewis

Cold Bend machine.

Apparatus for Measuring Deformation

A number of extensometers including Berry strain gages,
Martens mirror extensometer and Ewing extensometer.

Pittsburgh Testing Laboratory, 35 Sixth Avenue, New York City.

H. W. Bates, Manager.

Main Office: Pittsburgh, Pa.

Chas. C. Kawin Co., 110 Pearl St., Buffalo, N.Y.

Main Office: 431 South Dearborn St., Chicago, Illinois.

Materials Testing Laboratory, College of the City of New York,
139th St. and Convent Avenue, New York City.

Ralph E. Goodwin, in charge of Materials Testing Laboratory.

Prefer experimental development work.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb., longest specimen 17 in.
" beam 9 ft.

Torsion - 10,000 lb.in.

Hardness - Brinell.

*Other laboratories, see supplement, page 34.

NORTH CAROLINA

School of Engineering, University of North Carolina, Chapel Hill
 G. M. Braune, Dean, School of Engineering.

Cannot prepare test specimens.
 Can measure deformation.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb., and 200,000 lb.

NORTH DAKOTA

Physical Testing, College of Engineering Laboratories, University
 of North Dakota, Grand Forks.

E. J. Babcock, Dean, College of Engineering.

Can prepare test specimens.
 Can measure deformation.

EQUIPMENT -- Testing Machines

A number of testing machines, the largest for
 Compression - 200,000 lb.

OHIO

Case School of Applied Science, Mechanical Testing Laboratory,
 University Circle, Cleveland.

Raymond H. Danforth, in charge of laboratory.

Prefer tests of automobile steel and other structural materials.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 10,000 lb., 30,000 lb., (2) 60,000 lb., 100,000 lb.
 200,000 lb.
 Transverse - 100,000 lb., longest beam 20 ft.
 Torsion - 50,000 lb.in.
 Hardness - Brinell
 " - scleroscope
 " - Rockwell.
 Impact - Charpy, 65 Kg.m.

The James H. Herron Co., 1360--1364 Third St., W., Cleveland.

James H. Herron, President and W. A. Carlson, Physical and Materials Testing. G. W. Helling, Materials inspection.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 50,000 lb.

Compression - 200,000 lb.

Hardness - Brinell

" - scleroscope.

Impact - Izod.

Fatigue - rotating beam.

Ohio Mechanics Institute, Central Parkway and Walnut St., Cincinnati, Ohio.

John T. Faig, President.

Commercial testing incidental to teaching and when of service to the community.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

The Ohio Brass Co., Mansfield.

A. A. Grubb, Director of Laboratories. L. H. Marshall, Metallurgist.

Majority of work on brass, malleable iron, and steel.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 50,000 lb.

Hardness - Brinell (Alpha)

" - Rockwell.

Impact - Izod, 5 lb.ft.

" - " 120 lb.ft.

Indentation - Erichsen, for sheet metal.

Engineering Experiment Station, Ohio State University, Columbus.

E. A. Hitchcock, Director. G. T. Morris, Structural Engineering.

The experiment station is primarily for research work. Certain professors can use equipment for private individuals if it does not interfere with the work of the station.

EQUIPMENT -- Testing Machines

Universal	-	400,000 lb.,	longest tensile specimen	9 ft., 6 in.
			" compression "	10 " 4 "
			" beam	20 "
"	-	500,000 lb.		
"	-	1,000,000 lb.,	longest tensile specimen	6 ft., 10 in.
			" compression "	7 " 6 "
			" beam	10 "

Laboratory of the Department of Mechanics, Ohio State University, Columbus.

James E. Boyd, Professor of Mechanics. Edwin F. Coddington.

No commercial testing. Prefer to devote time to teaching and research in mechanics of materials.

Can measure deformation.

EQUIPMENT -- Testing Machines

Universal - (4) 50,000 lb.
 " - 100,000 lb., longest specimen 5 ft.
 Torsion - 60,000 lb.in.
 Impact - Charpy, 120 lb.ft.

Laboratory of the Department of Mechanical Engineering, Ohio State University, Columbus.

William T. Magruder, Professor of Mechanical Engineering. H. M. Jacklin, Assistant Professor of Automotive Engineering.

Prefer research work on metals or mechanical engineering structures.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 20,000 lb., 50,000 lb., 100,000 lb., 200,000 lb.
 Torsion - 4,200 lb.in.
 Cold Bend machine
 Hardness - Brinell.

Forest City Testing Laboratory Co., 511-519 Superior Bldg., Cleveland.

Prefer work on building and paving materials.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

Charles C. Kavin Co., 222 W. Fourth St., Cincinnati.

Main Office: 431 South Dearborn St., Chicago, Illinois.

OREGON

Department of Mechanics and Materials, Oregon State Agricultural College, 306 South 8th St., Corvallis.

S. H. Graf, Professor of Mechanics and Materials, in charge.

C. E. Thomas, Associate Professor of Mechanics and Materials.

Undertake testing or research work.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 30,000 lb., longest specimen 5 ft.

" - 50,000 lb., " beam 36 in.

" - 50,000 lb., autographic.

" - 150,000 lb., longest tensile specimen 36 in.

" compression " 50 in.

" beam 16 ft.

Compression - 12,500 lb.

Transverse for cast iron.

Torsion - 60,000 lb.in.

Cold Bend machine

Impact - Izod, 120 lb.ft.

Fatigue - Upton-Lewis, White-Souther, Landgraf-Turner.

Apparatus for Measuring Deformation

Extensometers and compressometers.

PENNSYLVANIA

Engineering Laboratory, Hicks Hall, Swarthmore College, Swarthmore.

Weston E. Fuller, Professor in charge of engineering. C. G. Thatcher, Assistant Professor of Mechanical Engineering.

Make any tests for which equipped.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 1,000 lb.

Tension - 1,500 lb.

Torsion - 5,000 lb.in.

Hardness - Brinell attachment for testing machine.

" - scleroscope.

Fatigue - Upton-Lewis.

The Erie Laboratory, 1519 French St., Erie.

James A. Evans, Proprietor.

Cannot prepare test specimens.

Cannot measure deformation nor furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

Tinius Olsen Testing Machine Co., 500 N. 12th St., Philadelphia.

Tinius Olsen, President. Thorsten Y. Olsen, Vice President and Treasurer.

Can make all standard tests of iron and steel. Because the company manufactures special testing equipment, it is possible to make special tests that cannot well be made in other commercial laboratories.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 20,000 lb., 100,000 lb., and others having capacities up to 1,000,000 lb.

Riehle Bros. Testing Machine Co., 1424 N. Ninth St., Philadelphia.

Francis Buckingham, Chief Engineer, in charge of laboratory.

Prefer routine tensile tests of wire, leather, iron, and steel, chain, fabrics, and transverse tests of cast iron, etc.

Can prepare test specimens when necessary.

Can measure deformation and furnish stress curves.

The Engineering Experiment Station, State College, Pa.

R. L. Sackett, Dean and Director. F. G. Hechler, Professor,
Engineering Experiment Station.

Can make standard tests of materials.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 10,000 lb., 25,000 lb., and 100,000 lb.

Compression - 1,000,000 lb.

Several machines for

Torsion,

Cold Bend,

Fatigue, and

Impact tests.

University of Pittsburgh Materials Testing Laboratory, O'hara
Street, Pittsburgh.

J. Hammond Smith, in charge. L. W. McIntyre, Highway materials.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - (4) ranging from 50,000 lb. to 200,000 lb.

" - 200,000 lb., longest compression specimen 15 ft.
" beam 20 ft.

Transverse - 5,000 lb.

Torsion - 230,000 lb.in., longest specimen 15 ft.

Hardness - Brinell

" - scleroscope.

Fatigue - Upton-Lewis.

Riveter - Hanna pneumatic, 100,000 lb.

Apparatus for measuring Deformation

Special extensometers.

Carnegie Institute of Technology, College of Engineering, Schen-
ley Park, Pittsburgh.

William F. Mott, Director.

Prefer routine physical testing of structural materials.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - (2) 15,000 lb.
 " - Other machines ranging from
 " - 30,000 lb. to
 " - 400,000 lb., longest specimen 10 ft.
 " beam 20 ft.
 Compression - 50,000 lb.
 Transverse - 5,000 lb. and 20,000 lb.
 " - 250,000 lb., Ansler for uniform load on beam
 15 ft. long.
 Torsion - 1,000 lb.ft. Ansler.
 Hardness - Brinell
 " - scleroscope
 Impact - 75 lb.ft.
 Fatigue - Landgraf-Turner, alternating impact.

Drexel Institute, 32nd and Chestnut Sts., Philadelphia.

L. C. Urquhart, Mechanical testing. J. H. Billing, Mechanical Metallurgy.

Can prepare test specimens.
 Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 30,000 lb., and 200,000 lb.
 Torsion - 50,000 lb.in.

*Other laboratories, see supplement, page 34.

PHILIPPINE ISLANDS

Bureau of Science, 727 Herran St., Manila, P. I.

William H. Brown, Ph.D., Director.

Can prepare test specimens.
 Can measure deformation.

EQUIPMENT -- Testing Machines

Universal - 50,000 lb.
 " - 200,000 lb., longest beam 18 ft.

PORTO RICO

Laboratory of the Colleges of Agriculture and Engineering, University of Porto Rico, Mayaguez, P. R.

H. E. Setchell, Professor of Mechanical Engineering. C. Carol Mota, Assistant Professor, Civil Engineering.

Can prepare test specimens.
Cannot measure deformation or furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

TENNESSEE

Barrow-Agee Laboratory, Inc., 60 North Third St., Memphis.

G. Worthern Agee, President. E. R. Barrow, Secretary and Treasurer, in charge at Memphis.

Cannot prepare test specimens.
Cannot measure deformation or furnish stress curves.

EQUIPMENT -- Testing Machines

Compression - 200,000 lb.

Branch Offices

Barrow-Agee Laboratories, Inc., Democrat Printing & Lithographing Bldg., P. O. Box 293, Little Rock, Arkansas.
B. L. Caldwell, in charge.

Barrow-Agee Laboratories, Inc., Pearl St., Jackson, Miss.,
H. E. Covington, in charge.

Barrow-Agee Laboratories, Inc., P. O. Box 858, Shreveport, La.
J. R. Mays, Jr., in charge.

TEXAS

Rice Institute, Main Boulevard, Houston.

J. H. Pound, Assistant Professor, Mechanical Engineering.

Prefer work on strength of materials.

EQUIPMENT -- Testing Machines

Universal - 50,000 lb., 100,000 lb., 200,000 lb.,
Torsion - 60,000 lb.in.

Pittsburgh Testing Laboratory, Santa Fe Building, Dallas.

M. Payne, Manager.

UTAH

Engineering Laboratory, University of Utah, Salt Lake City.

Jos. F. Merrill, Director. E. A. Beckstrand, Professor, Mechanical Engineering.

Prefer mechanical tests of materials.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines.

Universal - 200,000 lb.

Torsion - 60,000 lb.in.

Hardness - Brinell

Impact machine

Friction machine.

VIRGINIA

Experimental Engineering Laboratory, University of Virginia,
Charlottesville, Va.

Charles Henderson, Assistant Professor, Experimental Engineering.

Prefer testing structural materials.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - (2) 100,000 lb., one autographic.

" - 200,000 lb., longest beam 18 ft.

Tension - 10,000 lb.

Transverse - 10,000 lb., for cast iron.

Torsion - 50,000 lb.in.

Impact - 100 lb.ft.

WASHINGTON

Materials Testing Laboratory, University of Washington, Seattle.

C. E. Magnusson, Director of Engineering Experiment Station.

I. L. Collier and A. M. Winslow, Professors.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - (2) 30,000 lb.,
 " - 100,000 lb.
 " - 200,000 lb., longest specimen, compression 12 ft.
 Torsion - 60,000 lb.in.
 Impact - 500 lb.ft.

I. F. Laucks, Inc., 99 Marion St., Seattle.

I. F. Laucks, President. H. P. Banks, Vice President. L. W. Eiertsen, Secretary-Treasurer.

Can prepare test specimens.
 Can not measure deformation or furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 200,000 lb.

Northwest Testing Laboratories, 2113 Third Avenue, Seattle.

F. H. Conrad, Manager, Seattle Laboratory, Chief Chemist.

Prefer research and experimental work.

Cannot prepare test specimens.
 Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb. and 150,000 lb.
 Torsion machines
 Hardness - scleroscope.

Branch Offices

Tacoma, Washington, City Hall Annex, J. L. Avis, Vice President and Director.
 Portland, Oregon, A. T. Maning, President and General Manager.
 C. A. Sharp, Portland Manager. I. G. McDuff, Engineer of Tests.

WISCONSIN

Materials Testing Laboratory, College of Engineering, University of Wisconsin, Engineering Bldg., Madison.

M. O. Withey, Professor of Mechanics, in charge of materials testing laboratory.

Prefer tests on building materials.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - (7) machines, capacities 10,000 lb. to 200,000 lb.

" - 600,000 lb., hydraulic, longest specimen 10 ft.
" beam 20 ft.

Transverse - 100,000 lb., longest beam 23 ft.

Torsion - Thurston,

" - Richle, longest specimen 15 ft.

Hardness - Brinell

" - scleroscope

Impact - Russell

Fatigue machine.

CANADA

Canadian Inspection and Testing Co., 100 Jarvis St., Toronto, Ont.

R. J. Marshall, President. E. R. Deans, Vice President and General Manager. R. W. Hurlburt, Engineer of Tests.

Can measure deformation.

EQUIPMENT -- Testing Machines

Universal - 10,000 lb., and 150,000 lb.

Hardness - Brinell.

Robt. W. Hunt Co., Standard Trust Building, Vancouver, B. C.,

W. A. Goddard, Manager.

EQUIPMENT -- Testing Machines

Compression - 200,000 lb. for concrete.

Robt. W. Hunt Co., 1001 McGill Bldg., Montreal, Quebec.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

California

Robt. W. Hunt Co., 251 Kearny St., San Francisco.

W. B. Gester, Manager.

EQUIPMENT -- Testing Machines

Universal - 200,000 lb.

Georgia

Georgia School of Technology, Atlanta, Ga.

R. S. King, Head of Mechanical Engineering Department.

Can prepare test specimens.

Can measure deformation.

EQUIPMENT -- Testing Machines

Universal - 50,000 lb.

Compression - 300,000 lb.

Illinois

Robt. W. Hunt Co., 445 North Sacramento Boulevard, Chicago (for test specimens); 2200 Insurance Exchange (for correspondence).

J. H. Campbell, Department Manager. F. W. Weiferich, Foreman of testing.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 50,000 lb., and 300,000 lb.

Fatigue machine for staybolts.

Lewis Institute, 1951 West Madison St., Chicago.

S. A. Richardson, Assistant Professor of Metallurgy. M. P. Husted, Instructor in Forge Shop.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 40,000 lb., and 200,000 lb.

Research Laboratory of the Portland Cement Association, 33 W.
Grand Avenue, Chicago, Ill.

Duff A. Abrams, Director.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 50,000 lb., 200,000 lb., 300,000 lb.

Compression - 2,000,000 lb.

Indiana

Rose Polytechnic Institute, Terre Haute, Ind.

Frank C. Wagner, President.

Can prepare test specimens.

Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb., 200,000 lb.

Tension - 10,000 lb.

Compression - 30,000 lb.

Transverse - 100,000 lb.

Torsion - 250,000 lb.in.

Michigan

Department of Engineering Research, University of Michigan, Ann
Arbor, Mich.

A. E. White, Director.

Prefer research work to routine testing.

Equipped to do mechanical testing.

Minnesota

College of Engineering and Architecture, Experimental Engineering
Laboratories, University of Minnesota, Minneapolis.

O. M. Leland, Dean. F. B. Rowley, Director, Engineering Labora-
tory. G. C. Priester, wood and metallic material.

Can measure deformation and furnish stress curves.

Can prepare test specimens.

EQUIPMENT -- Testing Machines

Universal (2) 50,000 lb.,
 100,000 lb.
 200,000 lb.
 Transverse - 5,000, autographic
 " 10,000 lb.
 Torsion - 60,000 lb.in.
 Impact - 120 Kg.m.
 Hardness - Brinell
 " - scleroscope.

Missouri

Department of Metallurgy, Missouri School of Mines and Metallurgy
 Rolla, Missouri.

Charles Y. Clayton, Professor of Metallurgy and Ore Dressing.
 M. H. Thornberry, " of Chemistry.

Can prepare test specimens.
 Can measure deformation and furnish stress curves.

EQUIPMENT -- Testing Machines

Universal - 50,000 lb., 200,000 lb.
 Torsion - 60,000 lb.in.
 Hardness -- Rockwell
 " - Brinell
 " - scleroscope

Robt. W. Hunt Co., Syndicate Trust Bldg., St. Louis.

A. A. Barenther, Manager.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.

Montana

University of Montana, School of Mines, Butte.

Curtis L. Wilson, Assistant Professor of Metallurgy.

Cannot prepare test specimens.
 Cannot measure deformation.

EQUIPMENT -- Testing Machines

Universal - 100,000 lb.
 Hardness - Brinell
 " - scleroscope.

New York

Touceda Laboratories, 943 Broadway, Albany.

Enrique Touceda. Gerald Parker, Supervisor, Physical Tests.

Can measure deformation and furnish stress curves.
Can prepare test specimens.

EQUIPMENT -- Testing Machines

Universal - 60,000 lb., for 1 1/2 inch diameter pipe.

Robt. W. Hunt Co., 53 Park Place, New York City.

J. F. Davis, Department Manager.

EQUIPMENT -- Testing Machines

Universal - 165,000 lb.
Hardness - Brinell.

Pennsylvania

Horace C. Knerr, Consulting Metallurgical Engineer, 1500 Green St Philadelphia.

Can prepare test specimens.
Can measure deformation and furnish stress curves.

Can make impact, tensile, hardness, and other tests.

