

DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS
GEORGE K. BURGESS, Director

DIRECTORY
OF
**COMMERCIAL TESTING AND
COLLEGE RESEARCH
LABORATORIES**

MISCELLANEOUS PUBLICATION No. 90

2nd ed.

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MISCELLANEOUS PUBLICATION No. 90

[SECOND EDITION]

Compiled and revised by Miss ANN E. RAPUZZI under the direction of
A. S. McALLISTER, chief of the division of specifications

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IN ACCORDANCE with law the National Bureau of Standards 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. To inform interested persons of the location of other laboratories, the bureau attempted to compile a complete list of the commercial testing laboratories throughout the country, together with indications of the types of commodities which they are willing to test. Information is given herein concerning 271 commercial testing laboratories, with 92 branch laboratories or offices. There is also presented a list of the laboratories of 186 colleges which are used not only for purposes of instruction but also to a considerable extent for research work.

An outline is given of the certification plan in accordance with which there have already been compiled 75 lists of manufacturers who have expressed their willingness to certify to purchasers that material supplied on orders based on the indicated 75 United States Government master specifications complies with the requirements and tests of these specifications.

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COMMERCIAL TESTING LABORATORIES

In recognition of the desirability under present conditions of independent commercial testing service and in anticipation of a marked increase in the demand for such service in both domestic and export trade, the National Bureau of Standards has compiled the accompanying list of laboratories throughout the country that are prepared to test various kinds of commodities to determine whether or not they comply with purchase specifications.

The existence of a thoroughly classified list of commercial testing laboratories will have a number of beneficial effects in promoting the use of specifications, not the least important of which will be the inducement offered to the large number of purchasers who have hitherto hesitated to buy on specifications.

Heretofore purchasers not individually equipped to make their own acceptance tests have been reluctant to adopt the specification method of buying commodities because of the fixed belief that many manufacturers work off "seconds" on such customers. The knowledge that they can at any time, when they so desire, call upon testing laboratories to check the deliveries made to them on contracts based on specifications will induce a large number of such purchasers to take full advantage of the specification method of purchasing.

The outstanding fact in the specification situation at the present time is that a very great majority of the purchasers who should be using specifications are not doing so. It is to this great group of purchasers that the accompanying lists of laboratories will prove most beneficial. If, in addition to obtaining copies of as good specifications as can be written at the present time, all purchasers are able to secure lists of firms willing to manufacture to these specifications and to certify to compliance therewith, and lists of testing laboratories and checking agencies, many of these purchasers will readily adopt the specification method of buying. This is especially true of the purchasers of States and municipalities who are anxious to use specifications, but have not thus far felt justified in doing so because of inability to determine whether or not the commodities comply with the specification requirements.

The application of the plan here outlined will mean that more manufacturers than at present will be in need of testing and inspection services upon which to base such certificates as they may be asked to issue to consumers buying upon nationally recognized specifications. Moreover, to the extent that the application of the plan will result in the use of specifications by purchasers not now buying on specifications, it will create a demand for testing service on behalf of the buyers. In any event, numerous consumers will resort to such tests as may be considered necessary or desirable to satisfy themselves that the commodities do actually comply with the specifications. It seems evident, therefore, that the widespread application of the plan must result in a greatly increased need for testing service by both the producers and consumers.

In the accompanying list of commercial testing laboratories the laboratories have been arranged alphabetically in accordance with the geographical locations of the laboratories. Numerical references are used to indicate the types of commodities tested, and alphabetical references indicate the nature of the tests.

SYMBOLIC REFERENCES TO NATURE OF TESTS

Symbolic references to nature of tests made are as follows:

a=Appearance, optical, microscopical.
b=Bacteriological, biological, pathological.
c=Chemical.
e=Electrical.
h=Heat, thermal, refractory.
i=Inspection, supervision, construction.

l=Lubrication.
m=Metallographic, metallurgical.
p=Physical, mechanical.
s=Service, performance, calibration.
t=Toxicological.
x=X ray, radiographic.

CLASSIFICATION OF COMMODITIES TESTED

The following classification is used to indicate the types of commodities tested and the numerical references thereto:

- 000-099=ANIMALS AND ANIMAL PRODUCTS (EXCEPT WOOL AND HAIR).
 000=Animals.
 010=Meats.
 020=Dairy products.
 030=Fish.
 040=Animal and fish oils, fats, and grease.
 050=Hides and skins, raw (except furs).
 060=Leather and leather manufactures.
 070=Furs.
 090=Miscellaneous animal products.
- 100-199=VEGETABLE FOOD PRODUCTS, OILSEEDS, EXPRESSED OILS, AND BEVERAGES.
 100=Grains and preparations.
 110=Fodders and feeds.
 120=Vegetables.
 130=Fruits and nuts.
 140=Oilseeds and vegetable oils and fats.
 150=Cocoa, coffee, tea, condiments, and leavening agents.
 160=Sugar, molasses, sirups, honey, and confectionery.
 170=Beverages.
- 200-299=VEGETABLE PRODUCTS EXCEPT FOOD, FIBERS AND WOOD.
 200=Rubber and similar gums and manufactures thereof.
 210=Gums, resins, and balsams.
 220=Crude drugs and essential oils.
 230=Dyeing and tanning materials of vegetable origin.
 240=Seeds (except oilseeds).
 250=Nursery and greenhouse stock.
 260=Tobacco.
 280=Starch and vegetable glue.
 290=Miscellaneous vegetable products.
- 300-399=TEXTILES.
 300=Cotton, cotton fabrics, and knit goods.
 310=Manufactures of cotton.
 320=Jute and jute manufactures.
 330=Flax, hemp, and ramie.
 340=Other vegetable fibers, straw, or grass.
 360=Wool and hair, and manufactures thereof.
 370=Silk and manufactures thereof.
 390=Miscellaneous textile products.
- 400-499=WOOD AND PAPER.
 400=Lumber (logs, timber, and other manufactured or partly manufactured wood).
 410=Lumber for building and factory use.
 420=Manufactures of wood (except furniture).
 430=Furniture of wood.
 470=Paper (except printed matter).
 480=Books and other printed matter.
 490=Miscellaneous paper products.
- 500-599=NONMETALLIC MINERALS.
 500=Coal, petroleum, asphalt, and mineral wax.
 510=Stone, sand, and cementitious materials.
 520=Glass and glass products.
- 530=Clay and clay products.
 540=Abrasive materials, asbestos, and chalk.
 550=Mica and rare minerals.
 560=Precious stones and imitations.
 570=Sulphur, magnesia, salt, and graphite.
 590=Other nonmetallic minerals.
- 600-699=ORES, METALS, AND MANUFACTURES (EXCEPT MACHINERY AND VEHICLES).
 600=Iron and steel.
 610=Iron and steel manufactures.
 620=Ferro-alloying ores, metals, and manufactures.
 630=Aluminum, antimony, bismuth, cadmium, and cobalt.
 640=Copper, brass, and bronze.
 650=Lead, mercury, and nickel.
 660=Precious metals, jewelry, and plated ware.
 670=Clocks, watches, and dials.
 680=Tin and zinc.
 690=Other ores, metals, alloys, and metal manufactures.
- 700-799=MACHINERY AND VEHICLES.
 700=Power-generating machinery (except electric).
 710=Electric machinery and supplies.
 720=Vehicles (except agricultural).
 730=Agricultural machinery and implements.
 740=Construction, conveying, and hoisting machinery.
 750=Mining, oil well, and pumping machinery.
 760=Metal-working machinery.
 770=Textile, sewing, and shoe machinery.
 780=Other industrial plant machinery.
 790=Miscellaneous industrial plant auxiliary equipment.
- 800-899=CHEMICALS AND ALLIED PRODUCTS.
 800=Coal-tar products.
 810=Medicinal and pharmaceutical preparations.
 820=Acids (except coal-tar), anhydrides, alcohol, etc.
 830=Other chemicals.
 840=Pigments, paints, and varnishes.
 850=Fertilizers and fertilizer materials.
 860=Explosives, fireworks, and ammunition.
 870=Soaps, cosmetics, and toilet preparations.
 880=Disinfectants and water treatments.
 890=Miscellaneous chemical products.
- 900-999=COMMODITIES NOT ELSEWHERE CLASSIFIED.
 910=Scientific and professional apparatus and supplies.
 920=Musical instruments.
 930=Office, printing, lithographic, and educational supplies.
 940=Toys, athletic and sporting goods.
 950=Containers.
 970=Fire-extinguishing apparatus and supplies.
 980=Brushes and brooms.
 990=Miscellaneous articles.

Example of use of numerical and symbolic references:
 600cpm is to be interpreted as "Iron and steel tested chemically, physically, and metallographically."

GEOGRAPHICAL LISTING OF LABORATORIES

ALABAMA

Name and address of laboratories	Commodities and nature of tests ¹
BIRMINGHAM:	
Froehling & Robertson (Inc.)-----	See Richmond.
R. W. Hunt Co., 420 Alabama Power Building.	See Pittsburgh.
Pittsburgh Testing Laboratory, 1700 Second Avenue, North.	See Pittsburgh.
Smith-Emery Co-----	See Los Angeles.
Southern Testing Laboratories, Brokers Building (branches at Lakeland, Jacksonville, Tampa, Fla.).	400p, 410p, 500cp, 510cp, 530cp, 600cp, 610cp, 620cp, 630cp, 680cp, 690cp, 720p (railway equipment), 850c, 880c.
LEEDS: Pittsburgh Testing Laboratory-----	See Pittsburgh.
MONTGOMERY: Battle Laboratory, 103 South Court Street.	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 850c.
RAGLAND:	
Froehling & Robertson (Inc.)-----	See Richmond.
Pittsburgh Testing Laboratory-----	See Pittsburgh.

ARIZONA

BISBEE: Motz Engineering Co., P. O. Box 919--	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
KINGMAN: E. Ross Householder-----	640c, 660c, 680c.
NOGALES: Miller's Assay Office-----	500c, 640c, 660c, 680c.
PATAGONIA: Patagonia Engineering & Assay Co.	600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
TUCSON: A. L. Tellegrin & Son, 100 South Stone Avenue.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 850c.

ARKANSAS

LITTLE ROCK: Barrow-Agee Laboratories (Inc.)-	See Memphis.
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CALIFORNIA

FRESNO: The Twining Laboratories, 2146-2148 Merced Street.	010cb, 020cb, 030cb, 040cpa, 050cpa, 060cpa, 070cpa, 090cpa, 100cas, 110cas, 120cas, 130cas, 140cas, 150cas, 160cas, 170cas, 200cpas, 210cpas, 220cpas, 230cpas, 240ca, 250sb, 260sb, 280ca, 290ca, 300cp, 310cp, 320cp, 330cp, 340cp, 360ca, 370ca, 390ca, 400p, 410p, 420p, 430p, 470pc, 480s, 490s, 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 560cp, 570cp, 590cp, 600cp, 610cp, 620c, 630c, 640c, 650c, 660cp, 670s, 680cp, 690cp, 700s, 710s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800c, 810c, 820c, 830cp, 840cp, 850c, 860c, 870c, 880cb, 890c, 910s, 920s, 930s, 940s, 950s, 970s, 980s, 990s.
Los ANGELES:	
Atkins & McRae, 747 South Hill Street----	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Baverstock & Payne, 552 South Figueroa Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
George W. Gooch Laboratories, 1431½ Santa Fe Avenue.	010c, 040c, 100cp, 110c, 120c, 130c, 140c, 850c, 870c, 880c.
John Herman, 339 South Los Angeles Street.	600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Robert W. Hunt Co., 516 Citizens National Bank Building.	See Chicago.
Los Angeles Testing Laboratory, 1300 South Los Angeles Street.	010cp, 020cp, 030cp, 040cp, 090cp, 100cp, 110cp, 120cp, 130cp, 140cp, 150cp, 160cp, 170cp, 200cp, 210cp, 220cp, 230cp, 240cp, 300cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 400cp, 410cp, 420cp, 430cp, 470cp, 480cp, 490cp, 500cp, 510cp, 530cp, 540cp, 550cp, 560cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 670cp, 680cp, 690cp, 700p, 710p, 720p, 730p, 740p, 750p, 760p, 770p, 780p, 790p, 800cp, 810cp, 820cp, 830cp, 840cp, 850cp, 860cp, 870cp, 880cp, 890cp, 910cp, 930cp, 940cp, 950cp, 970cp, 980cp, 990cp.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

CALIFORNIA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
LOS ANGELES—Continued. Arthur R. Maas Laboratories, 308 East Eighth Street.	000c, 010c, 020c, 030c, 040c, 050c, 060c, 070c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 470c (paper pulp), 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 570cp, 590cp, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 670c, 680c, 690c, 810c, 840c, 850c, 880c, 970c.
Raymond G. Osborne, Rives-Strong Building.	020c 040cp, 060p, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200cp, 210c, 300c, 330cp, 340cp, 360c, 400p, 410p, 470cp, 490cp, 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 740i, 750ip, 760ip, 800c, 810c, 820c, 830c, 840cp, 850c, 870c, 880c, 890c, 950p, 970p.
Smith-Emery Co., 245 South Los Angeles Street (branches at Seattle, San Francisco, Pittsburgh, Chicago, New York, Birmingham, Pueblo, Glasgow, Montreal).	020c, 030c, 040c, 090c (glue), 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200cp, 210c, 280c, 290c, 320p (rope), 330p, 340p, 410p, 470c, 500cp, 510cp, 520c, 530cp, 540cp, 550c, 570c, 590c, 600cp, 610p, 620c, 630c, 640cp, 650cp, 660c, 680c, 690c, 700i, 740i, 750i, 800c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c, 910p, 930c (inks).
Western Precipitation Co., 1016 West Ninth Street (eastern office at New York City).	010c, 020c, 030c, 040c, 060c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 240c, 260c, 280c, 290c, 300c, 310c, 340c, 370c, 390c, 400c, 470c, 500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 970c, 990c.
OAKLAND: H. G. Siefert Laboratory, 464 Twentieth Street.	020c, 030c, 040c, 090c, 100c, 110c, 120ac, 130acp, 140cp, 150cp, 160c, 170c, 200c, 210c, 220c, 230c, 280c, 290c, 300cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 470c, 490c, 500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cp, 660cm, 680cm, 690cm, 800c, 810c, 820c, 830c, 840cp, 850c, 870c, 880c, 890c.
PASADENA: R. C. Burt Laboratories, 904 East California Street.	500ac, 510ac, 620c, 630cp, 640cp, 650cp, 680cp, 710ps, 820cp, 830acp, 890acp, 910acps.
SAN FRANCISCO: Curtis & Tompkins, 338 California Street.	010c, 020c, 030c, 040c, 050cp, 060cp, 090c, 100cs, 110c, 120ca, 130c, 140ci, 150c, 160c, 170c, 500c (fuel), 510c, 520c, 530c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
A. A. Hanks (Inc.), 624 Sacramento Street. Robert W. Hunt Co., 251 Kearney Street. Charles C. Kawin Co., 693 Mission Street. H. E. Morse, 954 Howard Street. Pacific Chemical Laboratories, 417 Montgomery Street.	140c, 470c (pulp), 500c, 510cp, 660c. <i>See Chicago.</i> <i>See Chicago.</i> 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c. 010c, 040c, 050c, 060c, 090c, 100cp, 110c, 140c, 150c, 160c, 170c, 200c, 210c, 230c, 260c, 280c, 300p, 360p, 370p, 390p, 500cp, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Shaw Laboratories, The, 1155 California Street.	040a, 050a, 060a, 090a, 100a, 110a, 120a, 130a, 140a, 150a, 160a, 170a, 200a, 210a, 220a, 230a, 300a, 310a, 320a, 330a, 340a, 360a, 370a, 390a, 400a, 410a, 420a, 470a, 490a, 500a, 510a, 530a, 540a, 550a, 570a, 590a, 600am, 610am, 620am, 630am, 640am, 650am, 660am, 680am, 690am, 800a, 810a, 820a, 830a, 840a, 850a, 860a, 870a, 880a, 890a.
Smith-Emery Co. Wildberg Bros. Smelting & Refining Co., 742 Market Street.	<i>See Los Angeles.</i> 660c.

COLORADO

COLORADO SPRINGS: E. C. Woodward, 21 East Kiocoa Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
DENVER: Wm. Ainsworth & Sons (Inc.), 2151 Lawrence Street.	500s (transformer oil), 700s, 710s, 910s.
Paul S. Nice, 312 Seventeenth Street. J. W. Richards & Son, 1118 Nineteenth Street.	530p. 020c, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 280c, 470c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 890c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

COLORADO—Continued

Name and address of laboratories	Commodities and nature of tests ¹
DENVER—Continued. Root & Simpson, 1744 Broadway----- Western Research Corporation, 514 Eight- eenth Street. Henry E. Wood Assaying Co., 1730 Ara- pahoe Street.	640cm, 660cm, 680c. 500c, 640c, 680c. 500c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm.
PUEBLO: Smith-Emery Co-----	See Los Angeles.

CONNECTICUT

BRIDGEPORT: Bridgeport Testing Laboratory, 41 Cannon Street.	010c, 020c, 040c, 100c, 110c, 150c, 170cp, 500cp, 570c, 600cp, 610c, 620c, 630c, 640cp, 650c, 680c, 690c, 850c, 870c, 880c, 890c.
HARTFORD: The Stanley P. Rockwell Co., 66 Trum- bull Street. The Henry Souther Engineering Co., 11 Laurel Street.	600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm. 010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 410p, 500h, 510p, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 880c.
State Highway Commissioner, Highway Department.	500cp (tar), 510cp.

DISTRICT OF COLUMBIA

WASHINGTON: Industrial Research Laboratories, 2201 New York Avenue NW.	040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 260c, 280c, 290c, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa, 470cpa, 490cpa, 500cp, 510cp, 520c, 530cp, 540cp, 550c, 570c, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 800c, 810c, 820c, 830c, 840cpa, 850c, 870c, 880c, 890c.
F. R. McGowan, 527 Transportation Building.	070a, 300psca, 310psca, 320psca, 330psca, 340psca, 360psca, 370psca, 390psca, 770s, 870cs, 910s, 940p, 950p, 980s.

FLORIDA

JACKSONVILLE: Robert W. Hunt Co., 716 Professional Building. Southern Testing Laboratories, 127 Talley- rand Avenue.	See Chicago. See Birmingham.
LAKELAND: Southern Testing Laboratories, P. O. Box 1072.	See Birmingham.
MIAMI: Pittsburgh Testing Laboratory-----	See Pittsburgh.
TAMPA: Pittsburgh Testing Laboratory----- Southern Testing Laboratories-----	See Pittsburgh. See Birmingham.

GEORGIA

ATLANTA: Atlanta Paving Laboratory, 421½ Mari- etta Street (branch at Chattanooga). The Dumas Laboratory, 10½ Auburn Avenue. Froehling & Robertson (Inc.)----- Law & Co., Walton Building----- McCandless Laboratory----- Dr. Poole Maynard-----	300cp, 310cp, 500cp, 510cp, 570cp, 590c, 600cp, 610cp, 800c, 850c. 000c, 010c, 020c, 040c, 090c (glue), 110c, 140c, 150c, 170c, 500c, 510c, 530c, 540c, 570c, 600c, 630c, 640c, 650c, 680c, 840c, 850c, 870c, 880c, 930c (inks). See Richmond. See Wilmington, N. C. 850c. 500c.
EAST POINT: Georgia State Highway Depart- ment, P. O. Box 147.	400i, 500s, 510s, 530s, 600c, 800c (creosote oil and tar for roads), 840c.
SAVANNAH: Shuey & Co., 115 East Bay Street--	010c, 020c, 040cp, 060c, 100c, 110c, 120c, 140cp, 170c, 210c, 500cp, 510cp, 530cp, 540cp, 570cp, 590bp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 820cp, 830cp, 840cp, 850cp, 870cp, 880cp, 890cp.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

ILLINOIS

Name and address of laboratories	Commodities and nature of tests ¹
CHICAGO:	
American Bureau of Inspection and Tests, 53 West Jackson Boulevard.	510cp, 600cp, 610cp.
Automobile Testing Laboratory (Inc.), 2615 Michigan Avenue.	720psi (automobile).
Benedict Laboratories (Inc.), 641 South Wells Street.	020abc, 030bc, 040bc, 050cilp, 060cilp, 100bc, 110c, 120c, 130p, 140bcpl, 150ct, 160bc, 170c, 200cs, 210cp, 220c, 230c, 250acs, 280c, 360cp, 410cp, 470acp, 490c, 500cps, 510acps, 520c, 530cps, 540cps, 550cps, 570acps, 620c, 630ca, 640ca, 650cp, 660c, 680c, 690c, 720s, 800cb, 810c, 820c, 840cp, 850c, 870cps, 880cb, 890c, 920cp, 950cp, 970c, 980cp.
Block Laboratories, 612 North Michigan Boulevard, 222 East Ontario Street.	010c, 020c, 030c, 040c, 050c, 060c, 070c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210cp, 280cp, 500c, 630c, 640c, 650c, 660c, 680c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Dr. George Borrowman, 9 South Clinton Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Chemical & Engineering Co., 431 South Dearborn Street.	010abet, 020abet, 040abet, 050ac, 060acp, 090abet, 100abc, 110abc, 120abc, 130abc, 140abc, 150abc, 160abc, 170abet, 200ac, 210ac, 220ac, 230c, 260c, 280c, 290c, 300acps, 310acps, 320acps, 330acps, 340acps, 360acps, 370acps, 390acps, 400acps, 470acps, 490acps, 500cl, 510c, 520ac, 530ac, 540acp, 550ac, 560ac, 570ac, 590ac, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800cl, 810c, 820c, 830c, 850ci, 870aci, 880abc, 890c.
Chicago Paving Laboratory, 536 Lake Shore Drive.	410cpa, 500cp, 510cp, 530cp.
Chicago Testing House of United States Testing Co. (Inc.), 421 South Wells Street.	<i>See Hoboken.</i>
Columbus Laboratories, The, 31 North State Street.	000bt, 010bept, 020bc, 030bc, 040belp, 060c, 090abcp, 100bet, 110bet, 120bet, 140bet, 150cb, 170bet, 200c, 210c, 220c, 230cp, 240bcp, 260c, 280cp, 290abc, 300ac, 310ac, 320ac, 330ac, 340ac, 360ac, 370ac, 390ac, 470acp, 500clp, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 800c, 810act, 820c, 830c, 840c, 850c, 870ct, 880bc, 890ct, 910acps, 950cps, 990cps.
Commercial Testing and Engineering Co., 1785 Old Colony Building (branch at Charleston, W. Va.).	500c, 510c, 520c, 530c, 540c, 570c.
Dearborn Chemical Co., 310 South Michigan Avenue.	040cp, 140ep, 500epl, 510c, 880bc (water, etc.).
Deavitt Laboratories (Inc.), 209 South La Salle Street.	000c, 010c, 020c, 040c, 060c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 240c, 250c, 280c, 290c, 300c, 310c, 360c, 370c, 390c, 400c, 470c, 490c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 930c, 980s, 990c.
Walter H. Flood & Co., 932 East Forty-fourth Street. (Branch at Jackson, Miss.)	020cbap, 140cpa, 500acpi, 510acpi, 800acpi.
Gulick-Henderson Co. (Inc.), 431 South Dearborn Street.	<i>See New York.</i>
E. F. Houghton & Co., 3516 Shields Avenue.	<i>See Philadelphia.</i>
Robert W. Hunt Co., 2200 Insurance Exchange (branches at New York; Pittsburgh; St. Louis; Jacksonville; San Francisco; Kansas City, Mo.; Seattle; Dallas; Montreal (1001 McGill Building); Toronto (1303 Bank of Hamilton Building); Vancouver (1527 Standard Bank Building); New Orleans; Philadelphia; London, England (34/40 Ludgate Hill, EC-4); Cleveland; Los Angeles; Portland; Cincinnati).	060cp, 140c, 200c, 210c, 300c, 340c, 360c, 390c, 400p, 410p, 420p, 470c, 500cp, 510cp, 520cp, 530cp, 570cp, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 700s, 710s, 720s, 740s, 750s, 760s, 790s, 800c, 840c, 860c, 880c, 950p, 970p.
Industrial Research Laboratories of Peter Dengler (Inc.), 124 West Kinzie Street.	020c, 120c, 130c, 140c, 150c, 160c, 220c, 230c, 260c, 280c, 480c, 490c, 550c, 800c, 810c, 870c, 890c.
Charles C. Kawin Co., 431 South Dearborn Street (branches at Buffalo, Cincinnati, San Francisco).	500c (coal), 510c, 530c, 540c, 550c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

ILLINOIS—Continued

Name and address of laboratories	Commodities and nature of tests ¹
CHICAGO—Continued.	
R. H. Laverie & Sons ----- Mariner & Hoskins, 111 West Monroe Street.	<i>See</i> New York. 140c, 150c, 160c, 200c, 210c, 280c, 470c, 500c, 510c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Miner Laboratories, 9 South Clinton Street.	010c, 020c, 030c, 040c, 050c, 060c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 280c, 300cp, 360cp, 370cp, 390cp, 630c, 640c, 680c, 690c, 850c, 870c, 880c, 890c. 470cp.
Paper Laboratories (Inc.), 1700 Prairie Avenue.	
Phoenix Chemical Laboratory (Inc.), 3953 Castello Avenue.	040cps, 140cps, 160cps, 500cps (motor fuels and lubricating oils), 800cps, 820cps, 830cps, 840cps, 870c.
Pittsburgh Testing Laboratory, Old Colony Building.	<i>See</i> Pittsburgh.
Don L. Quinn Co., 609 North LaSalle Street.	950p.
Research Laboratory of the Portland Cement Association, 33 West Grand Avenue.	400p, 410p, 510cp, 600p, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Servicised Laboratories (Inc.), 6051 West Sixty-fifth Street.	500cp.
Siebel Institute of Technology, 960 Montana Street.	020c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210c, 280c, 290c, 500c, 820c, 840c, 870c, 880c.
Smith-Emery Co. ----- E. H. Ward & Co., 608 South Dearborn Street.	<i>See</i> Los Angeles. 140c, 170c, 400c, 410c, 500c, 510c, 530c, 570c, 600c, 610c, 630c, 640c, 650c, 680c, 690c, 700c, 710c, 720c, 730c, 740c, 750c, 760c, 770c, 780c, 790c, 800c, 820c, 840c, 470acip, 780s, 790s.
QUINCY: Paper Mill Laboratories (Inc.), 830 South Front Street.	

INDIANA

FORT WAYNE: Michigan Engineering Laboratories (Inc.).	<i>See</i> Detroit.
HAMMOND: Indiana Laboratories Co., 201 Logan Street.	010acp, 020acp, 040acp, 050acp, 090acp, 100acpsi, 110acpsi, 140acpsi, 160acp, 170acp, 500acpsi, 510acpi, 530acpi, 540acp, 570ac, 590ac, 600aci, 610aci, 620aci, 630acsi, 640acsi, 650acsi, 680acsi, 690acsi, 840ai, 850aci, 880c.
MITCHELL: Froehling & Robertson (Inc.) -----	<i>See</i> Richmond.

IOWA

DES MOINES: Patzig Testing Laboratories, 210 Eleventh Street.	400p, 410p, 500cp, 510cp, 530cp, 540cp, 550cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 800cp, 840cp, 850cp, 880c.
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KANSAS

BAXTER SPRINGS: Waring & Williams Laboratories.	<i>See</i> Joplin, Mo.
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KENTUCKY

LOUISVILLE: Janes & Breckler (Inc.), 107 South Fourth Street.	020c, 110c, 260c, 400c, 500c, 510i, 570c (salt), 590c (flourspar, barite), 600cp, 610cp, 620cp, 640c, 650c, 680c, 800c (creosote, tars), 840c, 850c.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

LOUISIANA

Name and address of laboratories	Commodities and nature of tests ¹
NEW ORLEANS:	
John C. P. Helm, 705 Tchoupitoulas Street.	050c, 100c, 110c, 140c, 500c, 850c, 870c.
Robert W. Hunt Co., 919 Carondelet Building.	See Chicago.
Frank W. Liepsner, 420 Camp Street.....	020c, 040c, 100c, 110c, 140c, 150c, 160c, 170c, 470c, 500c, 510cp, 620c, 630c, 650c, 660c, 680c, 690c, 800c, 840c, 850c, 870c, 890c.
The Rice Millers' Association, P. O. Box 1289.	100cs (rice).
Herbert M. Shilstone Co., 302 Camp Street.	100c, 160c, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
SHREVEPORT: Barrow-Agee Laboratories (Inc.)..	See Memphis.

MAINE

LEWISTON: A. B. Andrews, 14 Lisbon Street....	400c, 470c, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 910c (clinical materials).
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MARYLAND

BALTIMORE:	
Gascoyne & Co. (Inc.), 27 South Gay Street.	020c, 030c, 040c, 060c, 090c, 100ca, 110ca, 140c, 170c, 260c, 290c, 360c, 390c, 500cp, 510cp, 570c, 590c, 640c, 650c, 660c, 680c, 850acip, 870c, 890c.
Penniman & Browne, 341 Courtland Street.	020cb, 040cb, 050cb, 060cp, 090cb, 100cb, 110co, 130cb, 140c, 150c, 160c, 170c, 200cp, 210c, 220c, 230c, 280c, 290c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c, 910s, 970s, 980s, 990s.
Strasburger & Siegel, 15 South Gay Street....	010bc, 020bc, 030bc, 040bcp, 100c, 110c, 120abc, 130ac, 140c, 150abc, 160abc, 170abc, 200c, 210c, 220c, 280c, 300ac, 310ac, 320ac, 330ac, 340ac, 360ac, 370ac, 390ac, 470ac, 500cp, 510cp, 520c, 530c, 540c, 570c, 600c, 640c, 650c, 680c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Wiley & Co. (Inc.), Calvert and Reed Streets.	020c, 030c, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 170c, 260c, 280c, 470c (wood pulp), 490c, 500c, 530c, 540c, 570c, 600c, 820c, 850ci, 870c, 890c, 990c.
UNION BRIDGE: Froehling & Robertson (Inc.)..	See Richmond.

MASSACHUSETTS

BOSTON:	
Associated Factory Mutual Fire Insurances Cos., 184 High Street.	200cps, 640cps, 710psi, 970cips.
Bigelow, Kent, Willard & Co., Park Square Building.	060c, 070ac, 140c, 200c, 210c, 220c, 230c, 280ac, 290c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 400cp, 410cp, 420cp, 430cp, 470cp, 480cp, 490cp, 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 560cp, 570cp, 590cp, 600cp, 610cp, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800cp, 810cb, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Cotton Research Co. (Inc.), 1020 Washington Street.	300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 470cp.
Winthrop C. Durfee, 516 Atlantic Avenue.	230c, 300c, 310c, 360c, 370c, 800c.
Metcalf & Eddy Laboratory, Statler Building.	040c, 500cp, 510cp, 530cp, 880abcip.
George W. Miles, 88 Broad Street.....	090c, 290c, 390c, 400c, 470c, 500c, 590c, 600c, 690c, 800c, 810c, 820c, 830c, 890c.
Skinner, Sherman & Esselen (Inc.), 276 Stuart Street.	010cb, 020cb, 030c, 040c, 060cb, 090cb, 100cb, 110cb, 120cb, 130cb, 140c, 150cb, 160cb, 170cb, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 470cp, 490cp, 500cp, 510cp, 530cp, 540cp, 550cp, 570c, 590c, 600cp, 610cp, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800cp, 810cb, 820c, 830c, 840c, 850c, 870c, 880cb, 890c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

MASSACHUSETTS—Continued

Name and address of laboratories	Commodities and nature of tests ¹
BOSTON—Continued.	
The Thompson & Lichtner Co. (Inc.), 80 Federal Street.	200cp, 410p, 510cp, 530cp, 600cpi, 610cpi.
Dr. Lothar E. Weber, 729 Boylston Street.	200c, 300p, 310p.
J. R. Worcester & Co., 79 Milk Street.	510p, 530p.
CAMBRIDGE:	
General Radio Co., 30 State Street.	710s (radio), 910s.
Dr. A. H. Gill, Massachusetts Institute of Technology.	060c, 140cap, 200c, 210cap, 220ac, 470c, 500cap, 800c, 820c, 840c, 870c, 910c, 930cap, 970c.
George B. Haven, Massachusetts Institute of Technology.	300pc, 310p, 320p, 330p, 340p, 360p, 370p, 390p.
Arthur D. Little (Inc.), Charles River Road at Kendall Square.	010cb, 020cb, 030cb, 040cb, 060cbp, 070cb, 100cb, 110cb, 120cb, 130cb, 140cbp, 150cb, 160cb, 170cb, 200cp, 210c, 220c, 230cp, 260c, 280abcp, 300cpa, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp (rayon), 420cp, 470cpa, 490cpa, 500cph, 510pc, 520ep, 530cph, 540ep, 570c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700pc (wires, cables), 740cp (rope), 800cp, 820c, 830c, 840c, 850c, 870c, 880cb, 890cb, 930c.
George W. Miles, 88 Broad Street.	470c (pulp).
NEW BEDFORD: United States Testing Co. (Inc.)	See Hoboken.
PEABODY: The R. & M. Laboratories	060ep, 230c.
SPRINGFIELD: New England Laboratories, 121 Chestnut Street.	470cp (pulp and paper), 500hl, 510c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 830c, 880c.
WESTFIELD: Westfield Testing and Research Laboratories.	100c, 110c, 150c, 160c, 170c.

MICHIGAN

DETROIT:	
The Detroit Testing Laboratory, 554 Bagley Avenue.	010cb, 020cb, 040cb, 050cb, 060cp, 090cb, 100cb, 110cb, 120cb, 130cb, 140cb, 150cb, 160cb, 170cb, 200cp, 210c, 220c, 230cp, 260c, 280cp, 290c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 400cp, 410cp, 420cp, 430cp, 470cp, 480cp, 490cp, 500cp, 510ep, 530cp, 540c, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700p, 710p, 730p, 800c, 810c, 820c, 830c, 840cp, 850c, 860c, 870c, 880cb, 890cb, 930cp, 940p, 950p, 970p, 980p, 990ep.
General Testing Laboratories, 525 Woodward Avenue.	010acb, 020acb, 040c, 100ac, 140c, 150ac, 160c, 170cb, 220c, 280abcs, 290abcs, 300acs, 360acs, 370acs, 390acs, 470acsp, 490acsp, 500esp, 510esp, 540ac, 590cs, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810cbt, 820c, 830c, 840ac, 870abeps, 880abcs, 970cs, 990abeps.
Michigan Engineering Laboratories (Inc.), 2847 Grand River Avenue (branch at Fort Wayne).	500clh, 510cp, 800c, 870c.
Perry Testing Laboratory, 210 Third Street.	200cp, 280c, 300cp, 320cp, 330cp, 340cp, 360cp, 370cp, 400p, 410p, 470pc, 500c, 510cp, 520cp, 530cp, 540cp, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 820c, 830c, 840c, 880c, 890c.
Pittsburgh Testing Laboratory	See Pittsburgh.
United Laboratories, 161 Larned Street, West.	500c (coal), 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
JACKSON: City of Jackson, Office of Building Inspector.	510cp.

MINNESOTA

DULUTH: Minnesota Testing Laboratories (Inc.), Glencoe Building.	020c, 100c, 110c, 140c, 500c, 510cp, 530cp, 540c, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680c, 690cp, 700s, 790s, 800c, 830c, 840c, 850c, 880c, 890c, 990c.
MINNEAPOLIS:	
J. R. Hoven, 424 Tribune Annex.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
The Howard Wheat and Flour Testing Laboratory, Old Colony Building.	020c, 100cs, 110c, 120c, 140c, 150c, 160c, 170c, 280c, 850c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

MINNESOTA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
MINNEAPOLIS—Continued. Van Cleve Laboratories (Inc.), 322 South Fourth Street.	500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 800cp, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 990cp.

MISSISSIPPI

JACKSON: Barrow-Agee Laboratories (Inc.)----- Walter H. Flood & Co.----- R. M. Striger, P. O. Box 155----- MERIDIAN: N. E. Katz, 309 Cochran Building-	See Memphis. See Chicago. 020c, 110c, 140c, 500c, 510cp, 600c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 850c. 010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 240b, 260c, 390c (rayon), 500cp, 510c, 530c, 570c, 810c, 820c, 850c, 870c, 880c.
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MISSOURI

JEFFERSON CITY: Missouri State Highway Commission, High Street.	410p, 500c, 510cp, 530cp, 600cp, 610cp, 840c, 880c.
JOPLIN: Waring & Williams Laboratories (branches at Baxter Springs, Kans.; Webb City, Mo.; Cardin and Picher, Okla.).	010c, 020c, 040c, 110c, 140c, 160c, 170c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
KANSAS CITY: Robert W. Hunt Co., 303 Crear Leslie Building. Kansas City Testing Laboratory, 700 Baltimore Avenue.	See Chicago. 100c, 110c, 120c, 150ca, 160c, 170cb, 410p, 470cp, 500c, 510cp, 530cp, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660c, 680c, 690c, 800c, 810cb, 820c, 830c, 840c, 850c, 870c, 880cb, 890c.
ROLLA: Missouri Clay Testing and Research Laboratories.	510cpa, 520cpa, 530cpa, 590cpa.
St. Louis: Regis Chauvenet & Bro., 620 Chestnut Street. Gulick-Henderson Co. (Inc.), 5552 Hebert Street. Robert W. Hunt Co., 1403 Syndicate Trust Building. Laclede-Christy Clay Products Co., 1673 Railway Exchange Building. Nowak Chemical Laboratories, 721 Olive Street. St. Louis Sampling and Testing Works (Inc.), 211 South Seventh Street.	500c (coal), 510c, 520c, 530h, 570c, 590c, 600c, 620c, 640c, 650c, 660c, 680c, 690c, 840c (paints), 880c, 890c. See New York. See Chicago. 530cp. 020cpbi, 160cpbi, 170cpbi, 290abc.
H. E. Wiedemann, Chemical Building-----	020c, 030c, 060c, 090c, 110c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 250c, 260c, 290c, 470c, 500c, 510c, 520c, 530c, 540c, 570c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
WEBB CITY: Waring & Williams Laboratories--	See Joplin, Mo.

NEBRASKA

LINCOLN: Western Laboratories, 132 North Twelfth Street.	500cps, 510c.
OMAHA: The Omaha Testing Laboratories (Inc.), 1916 Farnam Street.	010c, 020c, 040cp, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500cp, 510cp, 530cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 800c, 840c, 850c, 870c, 880c, 890c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NEVADA

Name and address of laboratories	Commodities and nature of tests ¹
CARSON CITY: Nevada State Department of Highways.	500p, 510p, 600cp.
GOLDFIELD: Downer Bros., 418 North Columbia Street.	600c, 610c, 660c.
LOVELOCK: A. H. Scott Assay Office, P. O. Box 777.	500c, 510c, 530c, 540c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 850c, 860c, 880c, 890c.

NEW HAMPSHIRE

CONCORD: New Hampshire Highway Testing Laboratory.	500cp, 510cp, 840c.
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NEW JERSEY

BELLEVILLE: Frederick J. Maywald, 1 William Street.	020cb, 140cp, 150cp, 170cp, 200c, 210c, 220c, 230c, 260c, 280ca, 300ca, 310ca, 320ca, 330cp, 360cp, 400cps, 470cps, 480c (paste), 500cp, 520cp, 530cp, 540cp, 570cp, 590cp, 800cs, 840cs, 860ci, 870ci, 970s, 980s (brushes).
DOVER: Dover Laboratory, 53 East McFarlan Street.	500cp, 510cp, 530cp, 570cp, 600c, 660c, 690c.
HOBOKEN: United States Testing Co. (Inc.) (branches at New York; Philadelphia; Paterson; Chicago; New Bedford, Mass.; Shanghai, China).	020cb, 040c, 060c, 140c, 150c, 160c, 170c, 200c, 210c, 230c, 280c, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa, 470cpa, 480cpa, 490cpa, 500c, 510c, 530c, 540c, 570c, 800c, 810c, 820c, 830c, 840c, 870c, 880c, 890c.
LODI: Sal. Chas. Lascari, P. O. Box 5.	300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c.
MERCHANTVILLE: A. C. Herting, Browning Road and Elvena Avenue.	000abeit, 020abeit, 040abeit, 090abeit, 140abeit, 150abeit, 160abeit, 170abeit, 210abeit, 220abeit, 510aci, 590aci, 600aci, 620aci, 630aci, 640aci, 650aci, 680aci, 690aci, 800aci, 810abeit, 820aci, 830aci, 840aci, 870aci, 880abeit, 890aci.
NEWARK: The Blair Laboratory, 279½ Mulberry Street.	040cp, 050cp, 060cp, 140p, 230c.
The Gray Industrial Laboratories, 961 Frelinghuysen Avenue.	040c, 140c, 500cp.
J. W. Howard Laboratory, 234 Mount Prospect Avenue.	500cp (tars), 510cp, 530cp.
PATERSON: Certified Silk Service (Inc.)	See New York.
United States Testing Co.	See Hoboken.
ROCKAWAY: Container Testing Laboratories (Inc.), Pine and Stickle Streets.	090p (glue), 280p, 300p, 320p, 330p, 410p, 420p, 470p, 490p (boxes), 610p, 640p, 680p, 690p (cans), 950ps.
SOUTH ORANGE: Philip O. Gravelle, 114 Prospect Street.	060a, 150a, 200a, 300a, 310a, 320a, 330a, 340a, 360a, 370a, 390a, 400a, 470a, 510a, 530a, 540a, 550a, 570a, 600a, 610a, 620a, 630a, 640a, 650a, 680a, 690a, 840a, 870a.
WATCHUNG: Dr. Richard Moldenke.	600p, 610p.

NEW MEXICO

LAS CRUCES: New Mexico State Highway Department, Bureau of Materials.	500p (asphalt), 510p, 530p, 600p, 610p, 680cm (galvanized sheet metal).
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NEW YORK

ALBANY: Touceda Laboratories, 943 Broadway.	040ci, 140c, 200c, 210c, 280c, 310pa, 320pa, 330pa, 340pa, 360pa, 390pa, 410p, 470p, 490p, 500pc, 520c, 530c, 540c, 550c, 570c, 590c, 600ca, 610ca, 620ca, 630ca, 640ca, 650ca, 680ca, 690ca, 840c, 850c, 870c, 880c.
BROOKLYN: Foster Dee Snell, 295 Washington Avenue.	020c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210c, 280c, 290c, 390c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 670c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 990c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NEW YORK—Continued

Name and address of laboratories	Commodities and nature of tests ¹
BUFFALO:	
The A. W. Hoppenstedt Laboratory (Inc.), 52 West Chippewa Street.	040c, 050cp, 060cp, 140c, 230c, 500c.
Charles C. Kawin Co., 110 Pearl Street-----	See Chicago.
Pittsburgh Testing Laboratory-----	See Pittsburgh.
DOUGLASTON: Douglaston Laboratories (Inc.)--	
LONG ISLAND CITY:	
Radio Engineering Laboratories, 100 Wil- bur Avenue.	710ips (radio).
Ira I. Sloman, 117 Thompson Avenue-----	200cp (rubber).
NEW YORK CITY:	
Jerome Alexander, 50 East Forty-first Street.	040acp, 070acp, 090acp, 140acp; 170acp, 210acp, 280acp, 290acp, 390acp, 490acp, 530acp, 550acp, 590acp, 690acp, 780p, 790p, 800acp, 860acp, 870acp, 890acp, 990acp.
Charles V. Bacon, 3 Park Row-----	500cph (oil).
Dr. Clement S. Brainin, 505 Fifth Avenue---	660mp, 690s.
Bull & Roberts, 50 West Street-----	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 840c, 880c.
Certified Silk Service (Inc.), 46 East Forty- first Street. (Branches at Allentown, Pa., and Paterson, N. J.).	370achilps.
James Chittick, 45 East Seventeenth Street--	070a, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa.
James W. Cox, jr., 320 Broadway-----	300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa (rayon).
Dorr Co., 247 Park Avenue-----	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Howard Eliot Drake, 250 Park Avenue-----	650i, 690ci, 710cip, 740is, 790is, 850ip.
Ekroth Laboratories (Inc.), 461 Eighth Avenue.	000bt, 020abci, 040abep, 060abcp, 070abep, 090abcip, 100abcpt, 110abcpt, 120abcip, 130abcip, 140abcpt, 150abcpt, 160abcpt, 170abct, 200acp, 210acp, 220abc- cp, 230abep, 240abcpt, 260abc, 280abcp, 290abcpt, 300acp, 310acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acp, 400ap, 410ahp, 420achp, 470acp, 480acp, 490achp, 500chlp, 510acp, 520achp, 530achp, 540achp, 550achp, 560achp, 570chl, 590achlp, 600acp, 610acp, 620acp, 630acp, 640acp, 650acp, 660acp, 670acp, 680acp, 690acp, 800abcip, 810abct, 820abcpt, 830abcpt, 840achpt, 850abc, 870abcpt, 880cbt, 890abcip, 910cips, 930acips, 950abchip, 970cips, 980abcp, 990abchipst.
Electrical Testing Laboratories, Eightieth Street and East End Avenue.	040c, 060cp, 140c, 200cp, 230c, 300cp, 310cp, 320cp, 330cp, 390cp, 410p, 470p, 500c, 510cp, 520cp, 530cp, 540cp, 600cpm, 610cpm, 620cp, 630cp, 640cp, 650cp, 660cp, 670cp, 680cp, 690cp, 700s, 710s, 720s, 760s, 780s, 790s, 800c, 820c, 830c, 840c, 880c, 910s, 930s, 970s, 990s.
Fraser Laboratories, 50 East Forty-first Street.	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500chl, 810c.
Dr. William M. Grosvenor, 50 East Forty- first Street.	230c, 280cp, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 470cps, 490cps, 810c, 820c, 830c, 890c.
Gulick-Henderson Co. (Inc.), 145 West Thirty-sixth Street (branches at Pitts- burgh, Chicago, St. Louis, Montreal).	140cp, 150c, 160c, 170c, 400i, 500cp, 510cp, 520cp, 530cp, 540c, 550c, 560c, 570c, 590c, 600cp, 620c, 630c, 640cp, 650c, 660c, 680c, 690c, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Hochstadter Laboratories (Inc.), 227 Front Street.	See Stillman & Van Sieten Chemical Laboratory, below.
The Hospital Supply Co. and The Watters Laboratories, 155 East Twenty-third Street.	610p (aseptic steel furniture), 910p (sterilizers and hospital furniture).
Robert W. Hunt Co., 53 Park Place-----	See Chicago.
Emil F. Johnson, 135 Maiden Lane-----	470c (pulp).
Knight & Clarke, 50 East Forty-first Street--	040c, 140c, 170c, 210c (turpentine), 840c (shellac), 870c, 880bc (insecticides), 890c, 930c, 970c, 990c.
K. Hv. Knudsen, 104 John Street-----	470c (pulp).
Kraus Research Laboratories (Inc.), 110 West Fortieth Street.	510cp, 530cp.
R. H. Laverie & Sons (Inc.), 17 State Street (laboratories at Chicago, Pitts- burgh) (offices at Baltimore, Birming- ham, Boston, Cleveland, Los Angeles, New Orleans, St. Louis, Seattle).	000t, 010t, 020cb, 030t, 040c, 090c, 100cab, 110cab, 120cb, 130cb, 140ca, 150ca, 160ca, 170cab, 500c, 510c, 520c, 530c, 540c, 570c, 590c, 600c, 610c, 630c, 640c, 650c, 680c, 820c, 840c, 850c, 870cb, 880c, 890c.
Ledoux & Co., 99 John Street-----	500c, 530c, 540c, 550c, 570c, 590c, 600ca, 610ca, 620ca, 630ca, 640ca, 650ca, 660ca, 680ca, 690ca.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NEW YORK—Continued

Name and address of laboratories	Commodities and nature of tests ¹
NEW YORK CITY—Continued.	
H. A. Metz Laboratories (Inc.), 122 Hudson Street.	810bc.
J. H. Morecroft, One hundred and seventeenth Street and Broadway.	710s, 910s.
New York Produce Exchange, 2 Broadway.	040c, 100c, 110c, 140c, 150c, 160c, 210c, 240c, 820c, 840c, 850c, 870c.
New York Sugar Trade Laboratory, 80 South Street (for members only).	160ca.
New York Testing Laboratories, 72 Washington Street.	040cp, 140cp, 150cp, 170cp, 200cp, 210c, 220c, 260c, 280c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 410p, 470cpa, 490cpa (pulp), 500c, 510cp, 520cp, 530cp, 540c, 550c, 560c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 700s, 710s, 800cp, 810c, 820c, 840c, 860c, 870c, 880c, 930cp, 970cp.
Pease Laboratories, 39 West Thirty-eighth Street.	020cb, 040cp, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 260c, 500cp, 570c, 590c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880cb, 890c.
Lucius Pitkin (Inc.), 47 Fulton Street	500c, 510c, 530c, 570c, 600cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 810c, 820c, 830c, 840c, 850c, 990cs (buttons).
Pittsburgh Testing Laboratory, 35 Sixth Avenue.	See Pittsburgh.
The Reed Laboratories, 22 East Sixteenth Street.	060cp, 230c.
Dr. Ancel St. John, 505 Fifth Avenue, room 501.	200x, 500x, 510x, 530x, 540x, 550x, 560x, 570x, 590x, 600x, 610x, 620x, 630x, 640x, 650x, 680x, 690x, 820x, 830x, 890x.
Schwarz Laboratories (Inc.), 113 Hudson Street.	020cb, 040c, 100c, 110c, 140c, 150cp, 160c, 170cb, 210c, 220c, 280c, 290cb, 500c (except asphalt), 810cb, 820c, 830c, 870c.
Seil, Putt & Rusby (Inc.), 128 Water Street.	100ac, 120ac, 130ac, 140c, 170c, 210ac, 220acit, 240ac, 280ac, 800c, 810acit, 820c, 830c, 870c, 890c.
Sheldon, Hilberry & Grisewood (Inc.), 50 Church Street.	300p, 310p, 320p, 330p, 340p, 360p, 370p, 390p, 490pc, 500pc, 610p, 760s, 780s, 790s, 840pc, 910p.
Silk Grading Laboratory (Inc.), 381 Fourth Avenue.	370cp.
The Silk Laboratory, 95 Madison Avenue.	370p.
Smith-Emery Co.	See Los Angeles.
Stillman & Van Sicken Chemical Laboratory Co. (Inc.), 227 Front Street.	020cb, 040cb, 100c, 110c, 140c, 150c, 160c, 170c, 200cp, 210c, 220c, 230c, 240c, 260c, 280c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 500cp, 510cp, 530c, 540c, 570c, 590c, 600cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 800cs, 810cs, 820cs, 830cs, 840cs, 870cs, 880cs, 890cs.
Stillwell & Gladding, 80 West Street.	470c.
Travis Colloid Research Co. (Inc.), 119 Broad Street.	890cs (colloids and emulsions).
United States Testing Co. (Inc.), 316 Hudson Street.	See Hoboken.
Western Precipitation Co., 25 West Forty-third Street.	See Los Angeles.
NIAGARA FALLS:	
George F. Comstock, 967 Harrison Avenue.	600pm, 610pm (enameled ware), 620pm, 630pm, 640pm, 650pm, 660pm, 680pm, 690pm.
The FitzGerald Laboratories	530shi (refractories), 710is (electric furnaces).
ROCHESTER: National Food Manufacturers' Laboratory (Inc.), 496 Exchange Street.	
	010abc, 020abc, 030abc, 040abc, 090abc, 100abc, 110abc, 120abc, 130abc, 140abc, 150abc, 160abc, 170abc, 500c, 510c, 520c, 530c, 540c, 570c, 590c, 630c, 640c, 650c, 680c, 850c.
SCHENECTADY: William C. Arsem, 226 State Street.	
	210achp, 230achp, 280achp, 300achp, 310achp, 320achp, 330achp, 340achp, 360achp, 370achp, 390achp, 470achp, 480achp, 490achp, 500achp, 510achp, 520achp, 530achp, 540achp, 550achp, 560achp, 570achp, 590achp, 620achmp, 630achmp, 640achmp, 650achmp, 660achmp, 670achmp, 680achmp, 690achmp, 800achp, 810achp, 820achp, 830achp, 840achp, 870achp, 880achp, 890achp.
WATERTOWN:	
F. M. Williams, 172 Stone Street	470c (wood pulp).

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NORTH CAROLINA

Name and address of laboratories	Commodities and nature of tests ¹
WILMINGTON: Law & Co., 204 North Front Street (branch at Atlanta).	010c, 020c, 030c, 040c, 100c, 120c, 130c, 140c, 150c, 160c, 170c, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 820c, 830c, 850c, 880c, 890c.

OHIO

CANTON: United Alloy Steel Corporation-----	600c.
CINCINNATI: Robert J. Anderson (Inc.), 2416 Beckman Street.	500chip, 510chip, 520chip, 530chip, 570chip, 600cmpx, 610cmpx, 620cmpx, 630cmpx, 640cmpx, 650cmpx, 680cmpx, 690cmpx, 820c.
F. C. Broeman & Co., 215 East Fourth Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
The Consulting Co., Union Central Tower.	200cp, 210cp, 500cp (asphalt and mineral wax), 540cp (asbestos), 570cp, 840cp (pigments).
Robert W. Hunt Co., 509 Gerke Building--	<i>See Chicago.</i>
Charles C. Kawin Co., 222 West Fourth Street.	<i>See Chicago.</i>
Langdon-Meyer Laboratories, 519 Main Street.	020bca, 040bact, 100bc, 110bc, 170bct, 220bet, 280bc, 290bc, 810bc, 870bc, 880bc, 890bc.
Louis G. Robinson Laboratories, 31 East Fourth Street.	040abcp, 100c, 300p, 400p, 500achip, 510acp, 520acp, 530acp, 540acp, 550acp, 570acp, 600acimps, 630acimps, 640acimps, 650acimps, 680acimps, 690acimps, 800ac, 820ac.
CLEVELAND: American Gas Association (Inc.) Testing Laboratory, foot of East Sixty-second Street.	990s (gas appliances).
Cremer-Case Co., 2800 Washington Street NW.	500c, 600c, 610c.
Crowell & Murray, 407 Perry-Payne Building.	500c, 510cp, 520c, 530c, 540c, 550c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm.
R. H. Danforth, Case School of Applied Science.	300p (rope).
Forest City Testing Laboratory Co., 507 Superior Building.	010c, 020c, 040c, 060c, 090c, 100c, 110c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 280c, 290c, 500c, 510cp, 530cp, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
The James H. Herron Co., 1360 West Third Street.	300cp, 310cp, 320cp, 330cp, 410i, 500c, 510cp, 530cp, 540c, 570c, 590c, 600cpm, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 700s, 710s, 800c, 820c, 830c, 840c, 880c, 950p.
Robert W. Hunt Co., 636 Engineers Building.	<i>See Chicago.</i>
Pittsburgh Testing Laboratory-----	<i>See Pittsburgh.</i>
Textor Chemical Laboratories, 1165 West Sixth Street.	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500c, 510c, 520c, 530c, 540c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 660cm, 680cm, 690cm, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
COLUMBUS: Harrop Ceramic Service Co., 310 West Broad Street.	400hp, 410i, 500chs, 510achs, 520achs, 530achs, 540achs, 550achs, 570achs, 590achs, 600c, 690c, 710is, 740is, 820c, 830c, 890c, 910is, 990is.
Charles F. Long, 141 East Broad Street----	500 ch, 800c.
Ellis Lovejoy, 1538 North High Street----	530s.
Willard Richardson, Schultz Building-----	530chp.
LANCASTER: The Sharp-Shurtz Co., glass chemists and consulting engineers.	520cp.
MANSFIELD: A. A. Grubb, 67 Parkwood Boulevard.	510s (core sand, molding sand, core binder).
YOUNGSTOWN: C. W. Danforth Co., 2412 South Avenue----	500c, 510c, 530c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 840c.
R. C. McBride Commercial Chemical Laboratory, 339 West Federal Street.	020abc, 040ac, 100abc, 110abc, 140ac, 150abc, 160c, 170abc, 500ach, 510ch, 520c, 530c, 540cph, 550c, 560c, 570c, 590cahp, 600c, 800ci, 970cis.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

OKLAHOMA

Name and address of laboratories	Commodities and nature of tests ¹
CARDIN: Waring & Williams Laboratories-----	See Joplin, Mo.
PICHER: Waring & Williams Laboratories-----	See Joplin, Mo.

OREGON

PORTLAND:

City Health Laboratory, City Hall-----	010i, 020cb, 030i.
Robert W. Hunt Co., 720 Corbett Building.	See Chicago.
I. F. Laucks (Inc.), 310 Wilcox Building---	See Seattle.
E. W. Lazell, 537 Railway Exchange Building.	040c, 100cs, 110c, 130c, 140c, 150c, 160c, 170c, 200cp, 210c, 220c, 230c, 280cpa, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa, 470cpa, 500cp, 510cp, 520c, 530c, 540c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 800c, 810cb, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Northwest Testing Laboratories-----	See Seattle.
Oregon Independent Testing Laboratory, Third and Yamhall Streets.	010c, 020c, 030c, 040c, 050c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500h, 840c, 880c.
SALEM: Oregon State Highway Testing Laboratory, 1260 State Street.	500pc (petroleum asphalt), 510pc, 800cps, 840c, 890cps.

PENNSYLVANIA

ALLENTOWN:

Allentown Testing Laboratory, 373 Linden Street.	170c, 410p, 500c, 510cp, 600cp, 620cp, 810c.
Certified Silk Service (Inc.)-----	See New York.
CRESSON: Warner Laboratories, 617 First Street.	140c, 200cp, 500cp (asphalt), 510cp, 530cp, 540cp (asbestos), 570c (magnesia), 640c, 650c, 680c, 690c (solder), 700s (packing), 840c.
EASTON: Pittsburgh Testing Laboratory-----	See Pittsburgh.
ERIE: The Erie Laboratory, 1519 French Street.	500hl, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
HARRISBURG: Andrew S. McCreath & Son, 236 Liberty Street.	500ch, 510c, 530c, 600c, 620c, 690c.
MALVERN: J. Bishop & Co. Platinum Works---	660c.
NORTHAMPTON: Froehling & Robertson (Inc.)-	See Richmond.
PHILADELPHIA:	
American Water Softener Co., Southeast corner Lehigh Avenue and Fourth Street	880c.
Arnstein Research Laboratories, 191 East Roosevelt Boulevard.	020bcip, 030bcip, 040cip, 100abcip, 110abcip, 120abcip, 130abcip, 140abcip, 150abcip, 160abcip, 170abcip, 210ci, 220ci, 280cip, 360cip, 370cip, 400ci, 500cip, 700hilp, 710hilp, 730ilp, 780hilp, 790hilp, 800cip, 810cip, 820bcips, 850bcip, 870bcip, 890bcip.
Bell & Beltz (Inc.), 3340 North Broad Street.	020c, 040c, 090c, 100cp, 110cp, 120cp, 130cp, 140cp, 150cp, 160cp, 170cp, 300ca, 310ca, 320ca, 330ca, 340ca, 360ca, 370ca, 390ca, 500cp, 850c, 880c.
Booth, Garret & Blair, 404-406 Locust Street.	500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
The Chemical Service Laboratories (Inc.), southeast corner Eighteenth and Cherry Streets.	500c, 530c, 690c (solder and other nonferrous alloys), 800c.
W. B. Coleman & Co., Fifteenth and Wallace Streets.	500c, 510cp, 530cp, 540c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 850c, 880c.
E. L. Conwell & Co., 2024 Arch Street-----	140c, 150c, 160c, 170c, 410p, 470p, 500cp, 510cp, 520cp, 530cp, 540cp, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650c, 660cp, 680cp, 690cp, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
George C. Davis, 636 Race Street-----	600c, 610c, 620c, 630c, 640c, 650c, 680c, 960c.
J. Atlee Dean, 614 South Forty-eighth Street.	000eb, 010cb, 020cb, 030cb, 040cb, 060c, 140cba, 150cb, 160c, 170c, 220c, 300ca, 360ca, 370ca, 470ca, 500c, 510c, 530c, 570c, 590c, 600c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

PENNSYLVANIA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
PHILADELPHIA—Continued.	
Frank R. Gunn Co., 704 Market Street----	020c, 040cp, 090c, 100c, 110c, 140cp, 170c, 200c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 500cp, 510c, 520c, 530c, 570c, 590c, 600ca, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Hamlin & Morrison, 216 South Second Street.	470c (pulp).
Joseph W. E. Harrison, 636 Race Street----	010b, 020b, 030b, 040b, 120b, 130b, 140b, 150b, 160b, 170b, 880b.
E. F. Houghton & Co., 240 West Somerset Street (branch at Chicago).	040cp, 050cp, 060cp, 140c, 500c.
Robert W. Hunt Co., 40 Transportation Building.	See Chicago.
Horace C. Knerr, 538 East Washington Lane.	600pm, 610pm, 630pm, 640pm, 690pm.
LaWall Laboratories, 636 Race Street-----	000abc, 010abc, 020abc, 040abc, 050bc, 060c, 070bc, 090bc, 100abc, 110abc, 120abc, 130abc, 140abc, 150abc, 160abc, 170abc, 200abc, 210abc, 220abc, 230abc, 240abc, 250abc, 260abc, 280abc, 290abc, 300abc, 310abc, 320abc, 330abc, 340abc, 360abc, 370abc, 390abc, 500acp, 510acp, 520acp, 530acp, 540acp, 550acp, 560acp, 570acp, 590acp, 800abc, 810abc, 820abc, 830abc, 840abc, 850abc, 870abc, 880abc, 890abc, 930acps, 950acps, 970acps.
James V. McCrae, 3218 Rhawn Street, Holmesburg.	500h, 510c, 530c, 540c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
Charles E. Mullin, 3820 Sansom Street----	200ca, 220ca, 230c, 300ca, 310ca, 320ca, 330ca, 340ca, 360ca, 370ca, 390ca, 560epa, 800c, 810c, 820cp, 830c, 870c, 890c.
Tinius Olsen Testing Machine Co., 500 North Twelfth Street.	410p, 510p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p.
Pittsburgh Testing Laboratory-----	See Pittsburgh.
Riehlé Bros. Testing Machine Co., 1424 North Ninth Street.	060p, 200p, 310p, 320p, 330p, 360p, 370p, 390p, 510p, 520p, 530p, 600p, 610p, 620p, 630p, 640p, 650p, 680p.
Samuel P. Sadtler & Son (Inc.), 210 South Thirteenth Street.	040c, 050cb, 060c, 110c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 280c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 470ca, 490ca, 500cp, 510c, 520c, 530c, 540c, 570c, 590c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Smith, Rudy & Co., 411 Walnut Street----	500ch, 530c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
United States Testing Co-----	See Hoboken.
PITTSBURGH:	
Buckmaster Laboratories (Inc.), 200 Sixth Avenue.	000t, 010t, 020ab, 030t, 040ca, 090ca, 100c, 110c, 140ac, 170abc, 300ac, 330ac, 360ac, 370ac, 390ac, 470c, 500ch, 510cp, 570c, 600ac, 610ac, 620ac, 630ac, 640ac, 650ac, 660c, 680ac, 690ac, 700ip, 710ip, 720ip, 730ip, 740ip, 750ip, 760ip, 770ip, 780ip, 790ip, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880abc, 890c, 990abch, 990cb.
Dairy Products Laboratory, 417 Martin Building, N. S.	020cb.
Gulick-Henderson Co. (Inc.), 524 Fourth Avenue.	See New York.
Robert W. Hunt Co., 400 Monongahela Bank Building.	See Chicago.
R. H. Laverie & Sons (Inc.)-----	See New York.
Pittsburgh Testing Laboratory, Stevenson Street at Locust (branches at Buffalo; New York City; Universal, Pa.; Easton; Philadelphia; Pittsburgh; Miami; Tampa; Birmingham; Ragland, Ala.; Leeds, Ala.; Richard City, Tenn.; Kingsport, Tenn.; Dallas; Chicago; Detroit; Cleveland; Houston; Milwaukee).	020c, 040cp, 060p, 090c, 110c, 140c, 150c, 160c, 170c, 200cp, 300pc, 310p, 320p, 330p, 340p, 360pc, 370p, 390p, 400p, 410p, 420p, 430p, 470p, 480p, 490p, 500cp, 510cp, 520cp, 530cp, 540cp, 550cp, 560cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 670p, 680cp, 690cp, 700ps, 710ps, 720ps, 730ps, 740ps, 750ps, 760ps, 770ps, 780ps, 790ps, 800cp, 820cp, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 910cp, 650c, 970c, 980p, 990cp.
Smith-Emery Co-----	See Los Angeles.
UNIVERSAL: Pittsburgh Testing Laboratory----	See Pittsburgh.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

RHODE ISLAND

Name and address of laboratories	Commodities and nature of tests ¹
NEWPORT: The Eppley Laboratory, 12 Sheffield Avenue.	710s (thermocouples, thermopiles, standard cells).
PROVIDENCE:	
Saunders & Franklin, 184 Whittier Avenue.	040c, 140c, 500c, 600cm, 620c, 630c, 640c, 650c, 680c, 690c, 870c.
Textile Mill Service, 95 Fountain Street.	300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp.

SOUTH CAROLINA

CHARLESTON: Parker Laboratory, 40 Broad Street.	010ct, 040ct, 100c, 140c, 500c, 510cpi, 530cp, 570c, 590c, 800c, 810c, 830c, 840c, 850c, 870c, 880c, 890c.
COLUMBIA: Charles W. Rice Co., P. O. Box 538.	010c, 020bc, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 170bc, 530c, 850c.

TENNESSEE

CHATTANOOGA:	
Atlanta Paving Laboratories	See Atlanta.
Froehling & Robertson (Inc.)	See Richmond.
KINGSFORT:	
Froehling & Robertson (Inc.)	See Richmond.
Pittsburgh Testing Laboratory	See Pittsburgh.
MEMPHIS: Barrow-Agee Laboratories (Inc.), 60 North Third Street (branches at Shreveport, La.; Jackson, Miss.; Little Rock, Ark.).	010cp, 020cp, 040cp, 090cp, 100c, 110c, 140cp, 150c, 160c, 170c, 220c, 240b, 280cp, 290cp, 500cp, 510cp, 520cp, 530cp, 540cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 800cp, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
NASHVILLE: Froehling & Robertson (Inc.)	See Richmond.
RICHARD CITY: Pittsburgh Testing Laboratory	See Pittsburgh.

TEXAS

AMARILLO: Southwestern Laboratories, 613 Polk Street.	See Fort Worth.
DALLAS:	
Robert W. Hunt Co., 1213 Kirby Building.	See Chicago.
Landon C. Moore, 1713½ Young Street	010c, 020bc, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500c, 510c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Pittsburgh Testing Laboratory, Santa Fe Building.	See Pittsburgh.
Southwestern Laboratories, 1312½ Main Street.	See Fort Worth.
EL PASO: George W. Cameron, 205 San Francisco Street.	510c, 530c, 600c, 610c, 620c, 630c, 640c, 650, 680c, 690c.
FORT WORTH:	
Fort Worth Laboratories, 828½ Monroe Street.	See Southwestern Laboratories.
Southwestern Laboratories, 828½ Monroe Street (branches at Dallas, Amarillo, San Antonio, Houston).	010c, 020c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210c, 240c, 290c, 300cp, 310cp, 360cp, 390cp, 500cp, 510cp, 520cp, 530cp, 570cp, 590cp, 600cp, 610cp, 640cp, 680cp, 690cp, 800cp, 820cp, 830cp, 840cp, 850cp, 870cp, 880cp, 890cp.
GALVESTON: Felix Poquin, 305½ Twentyssecond Street.	000b, 010bc, 020bc, 030bc, 040bc, 100c, 110c, 120c, 130c, 140c, 150cb, 160cp, 170c, 220c, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 470c (pulp), 500cp, 510cp, 530cp, 570cp, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 820c, 840c, 850c, 870c, 880c.
HOUSTON:	
Houston Laboratories, 215½ Main Street.	140c, 500c, 510c, 640c, 660c, 680c, 850c, 880c.
Pittsburgh Testing Laboratory	See Pittsburgh.
Southwestern Laboratories, 215½ Main Street.	See Fort Worth.
SAN ANTONIO: Southwestern Laboratories, 308½ Navarro Street.	See Fort Worth.

¹ See pp. 1 and 2

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

UTAH

Name and address of laboratories	Commodities and nature of tests ¹
SALT LAKE CITY:	
Alonzo F. Bardwell, 158 Southwest Temple Street.	640c, 650c, 660c, 680c, 690c.
Black & Deason, 165 Southwest Temple Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
C. S. Cowan, 160 Southwest Temple Street.	500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Crismon & Nichol, 229 Southwest Temple Street.	500c (coal), 530c, 570c, 600c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Utah State Road Commission, Capitol Building.	500cps, 510cps, 600p (reinforcing steel), 800cps, 840cs.

VIRGINIA

FORDWICK: Froehling & Robertson (Inc.)-----	<i>See</i> Richmond.
NORFOLK: Froehling & Robertson (Inc.)-----	<i>See</i> Richmond.
Norfolk Testing Laboratories (Inc.), 288 Bank Street.	020bc, 040clp, 090cp, 100ca, 110ca, 130ai, 140cp, 150cp, 170c, 200ca, 210c, 280ca, 290ca, 340c, 360ca, 390c, 470c, 490c, 500achisp, 510acip, 520aci, 530acp, 540acp, 550acp, 570acp, 590acp, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 800act, 820c, 830c, 840acps, 850acips, 870c, 880c, 890c.
RICHMOND: Froehling & Robertson (Inc.), 814 West Cary Street (branches at Atlanta; Northampton, Pa.; Union Bridge, Md.; Norfolk; Fordwick; Kingsport, Tenn.; Chattanooga; Nashville; Birmingham; Ragland, Ala.; Mitchell, Ind.).	010c, 020cb, 040c, 090c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 260c, 280c, 290c, 300c, 360c, 390c (rayon), 400epi, 410epi, 470p, 490p, 500epih, 510epi, 530epi, 540cp, 550c, 570cp, 590cp, 600cpim, 610cpim, 620cpim, 630cpm, 640cpm, 650cm, 660c, 670ps, 680cpm, 690cpm, 740cp (rope), 800cp, 820c, 830cp, 840cp, 850c, 870cp (soaps), 880cbi, 890cp, 930c, 980p, 990epi.

WASHINGTON

SEATTLE:	
Falkenburg & Co., 116 Yesler Way-----	020c, 040c, 110c, 140c, 150c, 160c, 170c, 280c, 400c (creosoted), 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 630c, 640c, 650c, 680c, 690c, 800c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Geijsbeck Engineering Co., 601 Arctic Building.	500c, 530c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Robert W. Hunt Co., 621 Lyon Building---	<i>See</i> Chicago.
I. F. Laucks (Inc.), 314 Maritime Building (branches at Tacoma, Portland, Vancouver (349 Railway Street), Tsingtao (P. O. Box 123), China).	010c, 020c, 030c, 040c, 060c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210c, 220c, 230c, 280c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 470c, 500c, 510c, 520c, 530c, 540c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 680cm, 690cm, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Northwest Testing Laboratories, 2113 Third Avenue (branches at Tacoma, Portland).	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 500c, 510c, 530c, 600cp, 610cp, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800hl, 840c, 850c, 880c.
Pacific Coast Testing Laboratory, 502 Lyon Building.	500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 840c, 850c.
Smith-Emery Co.-----	<i>See</i> Los Angeles.
SPOKANE: The C. M. Fassett Co. (Inc.), 207 North Wall Street.	500ch, 510cp, 530cp, 550c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 840c, 870c, 880c, 910s (laboratory apparatus), 970c.
TACOMA:	
Bennett's Chemical Laboratory, 1142 Market Street.	040c, 110c, 140c, 500c, 510c, 530cp, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 680cm, 690cm (copper ores, matte blister copper), 800c, 850c.
I. F. Laucks (Inc.), 712 Tacoma Building---	<i>See</i> Seattle.
Northwest Testing Laboratories, City Hall Annex.	<i>See</i> Seattle.

WEST VIRGINIA

CHARLESTON: Commercial Testing & Engineering Co., P. O. Box 832.	<i>See</i> Chicago.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

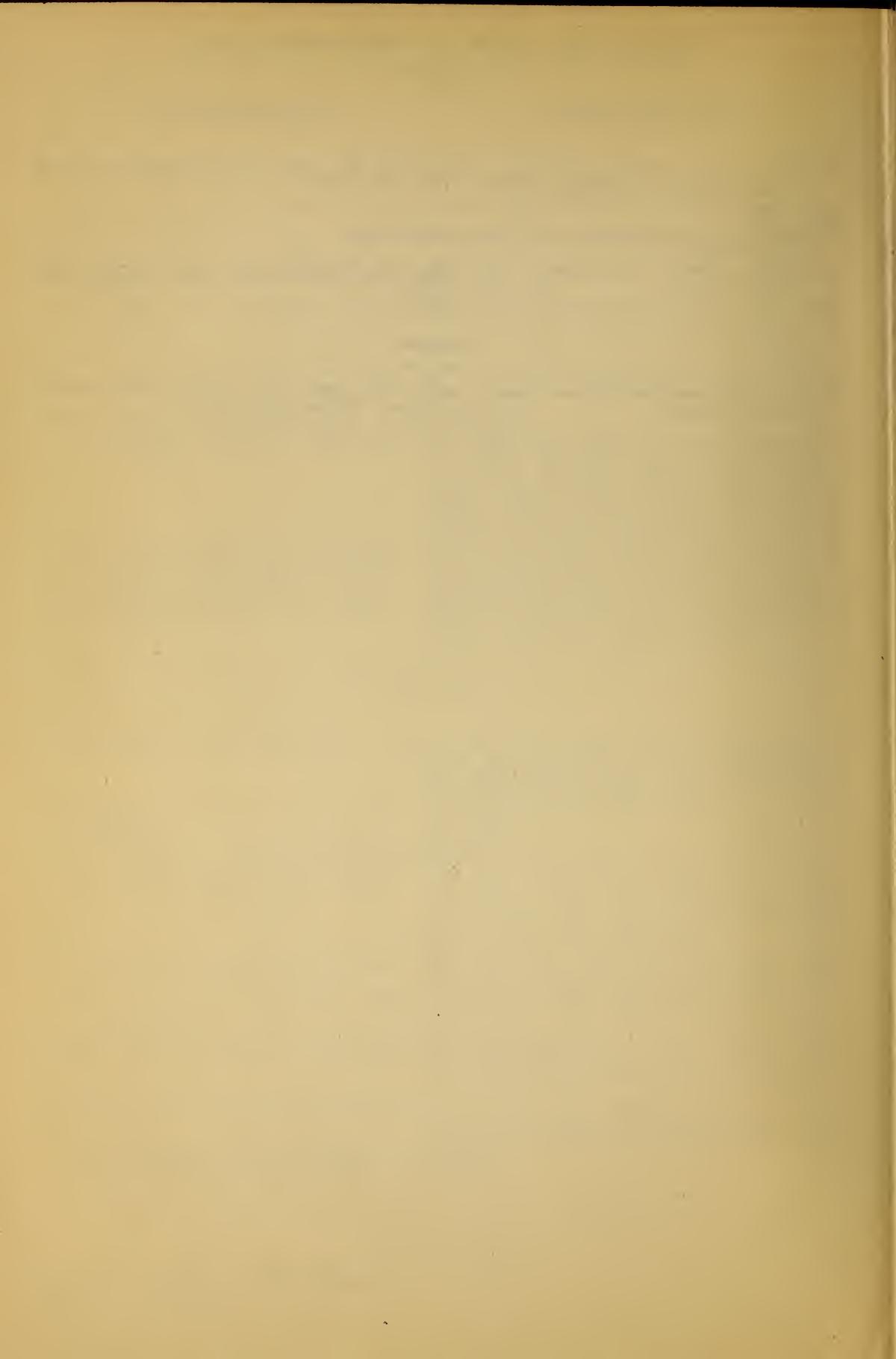
WISCONSIN

Name and address of laboratories	Commodities and nature of tests ¹
MADISON: Wilbur L. Jones, 204 Democrat Building --- Wisconsin Highway Commission, Capitol Annex.	020p (casein glue), 090pc (glue), 280cp, 930cp (adhesives). 510p, 600p, 840cp.
MILWAUKEE: Pittsburgh Testing Laboratory, 428 Pros- pect Avenue. Sommer Chemical Laboratories, 114 Grand Avenue.	See Pittsburgh. 010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 880c.

WYOMING

CHEYENNE: Wyoming State Highway Depart- ment, Capitol Buiding.	400cp, 410cp, 500cp, 510cp, 530cp, 600cpm, 610cpm, 620cpm, 690cpm, 800cs, 840cs.
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¹ See pp. 1 and 2.



COLLEGE RESEARCH LABORATORIES

It has seemed desirable to supplement the list of commercial testing laboratories with a list of the laboratories in colleges. These laboratories are used not only for purposes of instruction, but also to a considerable extent for research work. In fact, many important industrial research problems are being solved in the college laboratories.

The inclusion of a college laboratory in the accompanying list is to be interpreted merely as showing that the laboratory is equipped to test the types of commodities indicated for research and instructional purposes.

In almost all of the college laboratories a certain amount of commodity acceptance testing is being done on either a commercial basis or for the purchasers of the States, municipalities, public institutions, or the colleges themselves. However, there is a very wide diversity in the methods of conducting such work with special reference to the responsibility of the colleges for the tests made in the laboratories.

It is suggested that public purchasers and other persons interested in ascertaining whether or not commodity acceptance testing will be undertaken by certain colleges, and the conditions under which such testing will be carried on, communicate directly with the proper officers of the colleges or with the individuals in charge of the laboratories.

In the accompanying list the laboratories have been arranged alphabetically in accordance with the geographical location of the colleges. Explanations of the symbolic references to the types of commodities that can be tested and the nature of the tests made are given on pages 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES

ALABAMA

Location and name of laboratory	Commodities and nature of tests ¹
AUBURN:	
Alabama Polytechnic Institute.....	410p, 500ch, 510p, 600pc, 610pc, 700s, 710s, 760s, 820c, 830c.
Civil engineering laboratory, J. A. C. Callan.	
Electrical laboratory, W. W. Hill.	
Mechanical laboratory, C. R. Hixon.	
Chemical laboratory.	
Physics laboratory.	
BIRMINGHAM:	
Howard College.....	600pc, 820c, 830c, 850c.
Chemical laboratory, John R. Sampey.	
Physics laboratory, Louis K. Oppitz.	
UNIVERSITY:	
University of Alabama.....	
Chemical laboratory, S. J. Lloyd.	
Mining laboratory, J. R. Cudworth.	
Physical laboratory, F. R. Maxwell.	

ALASKA

COLLEGE:	
Alaska Agricultural College and School of Mines.....	020bc, 100cas, 390acp, 400p, 410p, 500ach, 510acp, 540ac, 550ac, 590ac, 620m, 630m, 660m, 680m, 730s, 750s, 890acpt.
Agricultural laboratory, Clinton H. Morgan.	
Chemistry laboratory, G. Raymond Hood.	
Civil engineering laboratory, W. H. Overshiner.	
Mining, metallurgical and geological laboratory, Ernest N. Patty.	
Mineralogical testing and commercial assaying labora- tory, Paul Hopkins.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

ARIZONA

Location and name of laboratory	Commodities and nature of tests ¹
TUCSON: University of Arizona----- Chemistry laboratory, Ernest Anderson. Agricultural chemistry laboratory, Paul S. Burgess. Physics laboratory, Frank M. Life. Electrical engineering laboratory, James C. Clark. Mining engineering and metallurgical laboratory, Marke Ehle. Civil engineering laboratory, Frank C. Kelton. Mechanical engineering laboratory, L. D. Darrow.	510p, 710s.

ARKANSAS

FAYETTEVILLE: University of Arkansas----- Bacteriology laboratory, William L. Bleecker. Engineering experiment station laboratory, Harrison Hale. Agronomy laboratory, Martin Nelson.	020b, 100cb, 240cb, 500h, 510cp, 880b.
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CALIFORNIA

BERKELEY: University of California----- Dairy industry laboratory, C. L. Roadhouse. Agricultural engineering laboratory, L. J. Fletcher. Animal husbandry laboratory, G. L. Hart. Civil engineering laboratory, R. E. Davis. Mechanical and electrical engineering laboratory, B. F. Raber. Mining laboratory, Frank H. Probert.	020c, 110c, 360cp, 410p, 500cp, 510p, 530p, 560i, 570c, 600 cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660c, 680cp, 690cp, 700s, 710s, 730s, 750s, 760s.
Los ANGELES: Occidental College----- Chemical laboratory, E. E. Chandler. Physical laboratory, Doctor Gorton. Biological laboratory, C. O. Esterley. Geological laboratory, Doctor Smiley. Botanical laboratory, Doctor Smiley. University of Southern California----- Electrical and mechanical engineering laboratory, P. S. Biegler.	700s, 710s, 730s, 910s.
PASADENA: California Institute of Technology----- Norman bridge laboratory of physics, R. A. Millikan. Gates chemical laboratory, Arthur A. Noyes. Electrical engineering laboratory, R. W. Sorenson. Engineering research laboratory, C. C. Thomas. Mechanical engineering laboratory, R. L. Daugherty.	410p, 500cp, 510cp, 520cp, 530cp, 550cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 700s, 710s, 750s.
STANFORD UNIVERSITY: Stanford University----- Mechanical engineering laboratory, A. B. Domonoske. Civil engineering laboratory, C. B. Wing. Electrical engineering laboratory, H. J. Ryan. Chemical engineering laboratory, R. E. Swain. Metallurgical laboratory, T. J. Hoover. Aerodynamics laboratory, W. F. Durand.	410p, 510p, 530p, 550cm, 570cm, 590cm, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 680pm, 690pm, 700s, 710s, 750s, 830c, 890c, 910s.

COLORADO

BOULDER: University of Colorado----- Materials testing laboratory, H. J. Gilkey. Concrete laboratory, H. J. Gilkey. Meter testing laboratory, C. M. McCormick. Electrical laboratory, F. A. Euston. Oil laboratory, J. A. Hunter. Steam laboratory, S. T. Simmering. Sanitary chemistry laboratory, C. F. Poe. Physical chemistry laboratory, Frank E. German. Organic chemistry laboratory, P. M. Dean.	010c, 020c, 040cp, 100c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 400p, 410p, 500cp, 510cp, 530cp, 540cp, 550cp, 590cp, 600p, 610p, 640p, 700s, 710s, 740s, 750s, 790s, 800c, 810c, 830c, 840cp, 870cp, 880cp, 890c.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

COLORADO—Continued

Location and name of laboratory	Commodities and nature of tests ¹
COLORADO SPRINGS:	
Colorado College-----	100c, 110c, 120c, 140c, 160c, 170c,
Biology laboratory, Ralph J. Gilmore.	200c, 500ch, 510cp, 530cp, 600cp,
Chemistry laboratory, Frank W. Douglas.	610cp, 620c, 640c, 650c, 660c, 690c,
Geology laboratory, I. Allen Keyte.	710p, 800c, 840c, 910p.
Physics laboratory, Paul E. Boucher.	
Psychology laboratory, John A. Glaze.	
FORT COLLINS:	
Colorado State Agricultural College-----	010cb, 020cb, 100c, 240c, 250i, 400p,
Experimental and chemistry laboratory, William P. Hedden.	410p, 510p, 530p, 570p, 600cp, 700s,
Student chemistry laboratory, G. H. Whiteford.	710s, 720s, 730s, 740s, 800c, 810c,
Physics laboratory, Fred G. Person.	830c, 850c, 890c.
Soils laboratory, Alvin Kezer.	
Dairy laboratory, George E. Morton.	
Veterinary laboratory, George H. Glover.	
Pathology laboratory, I. E. Newson.	
Bacteriology laboratory, Walter G. Sackett.	
GOLDEN:	
Colorado School of Mines-----	500c, 510p, 530c, 570c, 590c, 600cp,
Chemical laboratory, R. A. Baxter.	630c, 640c, 650c, 680c, 690c, 850c,
Experimental plant laboratory, A. J. Weinig.	880c, 890cp, 910p.
Clay laboratory, W. P. Huleatt.	
Geophysics laboratory, C. A. Heiland.	

CONNECTICUT

MIDDLETOWN:	
State Trade School-----	300p, 310p, 320p, 330p, 340p, 360p,
Textile laboratory, Samuel Bridge.	370p, 390p.
NEW HAVEN:	
Sheffield Scientific School of Yale University-----	370cp, 410p, 510p, 530p, 550cp, 600pm,
Sterling chemistry laboratory, H. A. Curtis.	610pm, 620pm, 630pm, 640pm,
Mason mechanical laboratory, S. W. Dudley.	650pm, 680pm, 690pm, 710s, 720s,
Dunham electrical laboratory, C. F. Scott.	800c, 820c, 830c, 880c, 890c, 910s.
Engineering mechanics laboratory, C. J. Tilden.	
Sloane physics laboratory, John Zeleny.	
Hammond mining and metallurgy laboratory, C. H. Mathewson.	

DELAWARE

NEWARK:	
University of Delaware-----	020cb, 500p, 510p, 530p, 600c, 610c,
Physics laboratory, G. P. Paine.	700s, 710s, 760s, 800c, 820c, 830c,
Civil engineering laboratory, H. K. Preston.	850c, 890c.
Chemistry laboratory, A. S. Eastman.	
Mechanical laboratory, M. V. G. Smith.	
Agricultural experiment station, C. A. McCue.	
Bacteriology laboratory, C. C. Palmer.	
Horticultural laboratory, L. R. Detjen.	
Agronomy laboratory, G. L. Schuster.	
Agricultural chemistry laboratory, P. B. Myers.	

DISTRICT OF COLUMBIA

WASHINGTON:	
Catholic University of America-----	500ch, 510p, 600cp, 610cp, 800c, 910s.
Civil engineering laboratory, A. J. Scullen.	
Geological and mining laboratory, Fred L. Serviss.	
Mechanical laboratory, L. H. Crook.	
Electrical laboratory, T. J. MacKannagh.	
Chemical laboratory, H. Chambliss.	
Georgetown University-----	150ca, 230c, 500c, 570c, 600cm, 630c,
Organic chemistry laboratory, George L. Coyle.	640c, 650c, 660c, 680c, 690c, 800c,
Quantitative chemistry laboratory, Arthur E. Espen-	810bc, 820c, 830c, 880c, 890c.
scheld.	
Quantitative chemistry laboratory, Lawrence A. Gorman.	
General chemistry laboratory, Joseph A. Muldoon.	
Physics laboratory, John L. Gipprieh.	
Biological laboratory, John A. Frisch.	

¹ See pp. 1 and 2.

BUREAU OF STANDARDS
GEOGRAPHICAL LISTING OF COLLEGES—Continued

DISTRICT OF COLUMBIA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
<p>WASHINGTON—Continued. George Washington University----- Radio-electricity laboratory, Louis Cohen. Chemistry laboratory, H. C. McNeil. Civil engineering laboratory, Hugh Miller. Physics laboratory, T. B. Brown. Bacteriology laboratory, O. B. Hunter. Mechanical laboratory, J. H. Platt. Electrical laboratory, N. B. Ames.</p>	410p, 500p, 510p, 600p, 610p, 700s, 710s, 820c, 830c, 880cb.

FLORIDA

<p>DELAND: John B. Stetson University----- Mechanical laboratory, D. E. Davis. Electrical laboratory, R. E. Heffner. Civil engineering laboratory, E. P. Barrell. Chemical laboratory. Physics laboratory.</p>	500ch, 510p, 600cp, 610cp, 700s, 710s.
<p>GAINESVILLE: University of Florida----- Physics laboratory, W. S. Perry. Chemistry laboratory, F. H. Heath. Mechanical engineering laboratory, A. J. Strong. Electrical engineering laboratory, J. Weil.</p>	040psac, 060psc, 100ac, 110ac, 140acs, 150ac, 170ac, 200ac, 280ac, 290ac, 300ac, 330ac, 340hpsac, 360hpsac, 370hpsac, 390hpsac, 400hps, 410hps, 470ac, 500hpsac, 510hpsac, 520ac, 530hpsac, 540ac, 550ac, 560ac, 570ac, 590ac, 600psac, 610pasc, 620ac, 630pasc, 640psac, 650ac, 660ac, 680psac, 690ac, 700hps, 710is, 740p, 780is, 790ip, 800acs, 820ac, 830ac, 840acs, 850ac, 860ac, 870ac, 880ac, 890ac, 910is, 970acs, 990acs.

GEORGIA

<p>ATHENS: University of Georgia----- Electrical laboratory, U. H. Davenport. Civil engineering laboratory, C. M. Strahan. Chemical laboratory. Physics laboratory. Good roads laboratory.</p>	500ch, 510p, 600cp, 610cp, 700s, 710s.
<p>ATLANTA: Georgia School of Technology----- Textile research laboratory, Hibbard S. Busby. Metallography laboratory, Theodore S. Dunn. Civil engineering laboratory, F. C. Snow. Shop laboratory, R. S. King. Electrical engineering laboratory, T. W. Fitzgerald. Ceramic laboratory, A. V. Henry. Chemistry laboratory, G. H. Boggs. Experimental engineering laboratory, H. W. Mason.</p>	070taips, 230tacips, 300acips, 310acips, 320acips, 330acips, 340acips, 360acips, 370acips, 390acips, 400si, 410si, 500ch, 510p, 520aips, 530ahipm, 600amp, 620am, 630am, 640am, 650am, 680am, 690am, 700s, 710s, 720s, 760sih, 770s, 790s, 840acips, 910psa.

HAWAII

<p>HONOLULU: University of Hawaii----- Engineering laboratory, A. R. Keller. Physical laboratory, Paul Kirkpatrick. Chemical laboratory, F. T. Dillingham. Dairy laboratory, L. A. Henke.</p>	020c, 420p, 500c, 510p, 600pc, 610pc, 620pc, 630pc, 640pc, 650pc, 690pc, 800c, 820c, 830c, 850c, 880c, 890c.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

IDAHO

Location and name of laboratory	Commodities and nature of tests ¹
Moscow: University of Idaho----- Mechanical engineering laboratory, Ivan C. Crawford. Civil engineering laboratory, Ivan C. Crawford. Electrical engineering laboratory, Ivan C. Crawford. Chemical laboratory, Carlron Ende. Agricultural chemistry laboratory, Ray Neidig. Metallurgical laboratory, F. A. Thomson.	400p, 420p, 500p, 510p, 600p, 610p, 620cp, 630c, 640p, 650c, 680c, 710s, 730s, 800c, 810c, 820c, 830c, 840c, 870c, 880c, 890c.

ILLINOIS

BLOOMINGTON: Illinois Wesleyan University----- Chemical laboratory, F. S. Mortimer. Biology laboratory, W. D. Webster. Physics laboratory, T. F. Hargitt. Geology laboratory, E. T. Apfel.	040c, 100b, 110b, 120b, 130b, 170c, 500c, 510ca, 710p, 800c, 820c, 830c.
CHICAGO: Armour Institute of Technology----- Chemical laboratory, W. J. Bentley. Electrical laboratory, E. H. Freeman. Mechanical laboratory, G. F. Gebhardt. Civil engineering laboratory, M. B. Wells.	040cl, 060p, 100abc, 110abc, 120abc, 130abc, 140abcp, 150ac, 160ac, 170abc, 200acp, 210ac, 220ac, 230ac, 280acp, 300hpac, 320ac, 330hp, 340hp, 360hp, 400p, 410hp, 470hpac, 500plac, 520pac, 530pac, 540ac, 550acp, 570ac, 600pacm, 610pacm, 620pacm, 630pacm, 640pacm, 650ac, 660acm, 680pacm, 690pac, 700p, 710s, 740p, 790p, 800acp, 820ac, 830ac, 840ac, 870ac, 880ac, 910s.
Lewis Institute----- Chemistry laboratory, W. R. Smith. Physics laboratory, F. A. Rogers. Structural material research laboratory. Electrical laboratory, J. D. Nies.	400p, 410p, 500c, 510p, 600cp, 610cp, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 710s.
University of Chicago----- Kent chemical laboratory, W. A. Noyes, jr. Department of home economics laboratory, Katharine Blunt. Physiological chemistry and pharmacology laboratory, A. L. Tatum and F. C. Koch. Bacteriology laboratory, E. O. Jordan.	000b, 010cb, 020cb, 030cb, 040cb, 090cbt, 100cbt, 120b, 140cbt, 160cp, 200cbt, 290cbt (alkaloids), 300cp, 360cp, 370cp, 520p, 600c, 610c, 710s, 800cb, 810cb, 880cb, 910s.
EVANSTON: Northwestern University----- Chemistry laboratory, Frank C. Whitmore. Physics laboratory, B. J. Spence. Zoology laboratory, F. D. Barker. Botany laboratory, C. B. Atwell. Physiological chemistry laboratory, G. J. Farmer. Geological laboratory, U. S. Grant.	
MONMOUTH: Monmouth College----- Chemical laboratory, W. S. Haldeman. Physics laboratory, F. M. McClanahan. Geology laboratory, F. M. McClanahan.	170cp, 500cp (petroleum), 510cp, 520cp, 530cp, 540cp, 550cp (mica), 570cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 820cp, 880c (water treatments).
NAPERSVILLE: North Central College----- Chemistry laboratory, M. E. Nonnamaker. Physics laboratory, R. D. Rusk. Zoology laboratory, H. E. Eigenbridt. Botany and geology laboratory, C. L. Walton. Foods laboratory, Hazel M. Snyder.	300c, 330c, 360c, 370c, 390c, 630c, 640c, 650c, 660c, 680c, 710p, 770i, 820c, 910p.
PEORIA: Bradley Polytechnic Institute----- Chemistry laboratory, G. C. Ashman. Biology laboratory, W. H. Packard. Electrical laboratory, Fred Doce.	020b, 040c, 090c (tankage, blood greases), 160c (molasses), 500clp (coal, petroleum products), 510c, 600c, 640c (copper), 710s, 750is, 760is, 770is, 780is, 790is, 850c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES--Continued

ILLINOIS--Continued

Location and name of laboratory	Commodities and nature of tests ¹
URBANA:	
University of Illinois-----	100c, 110c, 140c, 150c, 160c, 170c, 300cp,
Engineering experiment station laboratory, M. S. Ketchum.	500cp, 510cp, 520cp, 530cp, 540c,
Applied chemistry testing work laboratory, J. M. Lindgren.	550c, 560c, 570c, 590c, 600cpm,
Ceramic engineering laboratory, C. W. Parmelee.	610cpm, 620cpm, 630cpm, 640cpm,
Applied mechanics laboratory, M. L. Enger.	650cpm, 660cp, 680cpm, 690cpm,
Mechanical engineering laboratory, A. C. Willard.	700s, 710s, 720s, 790s, 800c, 820c,
Highway engineering laboratory, W. C. Huntington.	830c, 840c, 850c, 870c, 880c, 890c.
Electrical engineering laboratory, E. B. Paine.	

INDIANA^{*}

BLOOMINGTON:	
Indiana University-----	100acp (cereals), 500achp, 510cap,
Geological laboratory, E. R. Cummings.	530ahpc, 550ahs, 630p, 640p, 650p,
Physics laboratory, Arthur L. Foley.	660cp, 680cp, 690p, 710cs (storage
Chemistry laboratory, Robert E. Lyons.	batteries), 750i, 790s, 890c, 910p,
Botany laboratory, David M. Mottier.	920p.
HANOVER:	
Hanover College-----	000b, 240a, 250ab, 300a, 330p, 370a,
Chemical laboratory, Ned Guthrie.	520a, 600p, 620p, 630cp, 640cp,
Physical laboratory, Harvey A. Zinoger.	650cp, 680cp, 690p, 820c, 830c, 850c,
Biological laboratory, Leonard L. Huber.	890c, 910aps.
INDIANAPOLIS:	
Butler University-----	500c, 510c, 520c, 530c, 570c, 590c,
Chemical laboratory, G. H. Shadinger.	600cp, 610c, 630cp, 640cp, 650p,
Physical laboratory, S. E. Elliott.	680cp, 690c, 820c, 850c.
LA FAYETTE:	
Purdue University-----	010c, 020c, 040c, 100c, 110ac, 120c,
Engineering laboratories and engineering experiment station A. A. Potter.	140c, 200ep, 210ep, 240b, 320ep,
Chemical engineering, H. C. Pepper.	400ep, 410p, 420ep, 470ep, 500pce,
Civil engineering, W. K. Hatt.	510pe, 520c, 530ce, 550ce, 570ep,
Electrical engineering, C. F. Harding.	590ep, 600cpme, 610cpme, 620cpm,
Mechanical engineering, G. A. Young.	630cpme, 640cpme, 650cpme, 680ce,
Practical mechanics, J. D. Hoffman.	690ce, 700s, 710sem, 720sem, 730p,
Agricultural experiment station, G. I. Christie.	750s, 760s, 780s, 790s, 800ce, 820c,
Chemical and physical laboratories, R. B. Moore.	840c, 850c, 880c, 910se.
NORTH MANCHESTER:	
Manchester College-----	630cm, 640cm, 650cm, 680cm, 820c,
Chemical laboratory, C. W. Hall.	850c, 870acp, 880bc.
Physical laboratory, C. S. Morris.	
Biological laboratory, Ed. Kinsner.	
NOTRE DAME:	
University of Notre Dame-----	020cb, 040cb, 070c, 110c, 140c, 150c,
Chemistry and chemical engineering laboratories, H. B. Froning.	160c, 170c, 500cph (coal), 510cp,
Metallurgical laboratory, E. G. Mahin.	520cp, 530cp, 600cp, 610cp, 620cp,
Organic research laboratory, J. A. Nienwland.	640cp, 650cp, 680cp, 690cp, 820c,
Biology laboratory, F. Wenninger.	830c, 840c, 850c.
TERRE HAUTE:	
Rose Polytechnic Institute-----	500c, 510cp, 600cp, 610cp, 620cp, 630cp,
Civil engineering laboratory, R. E. Hutchins.	640cp, 650cp, 660cp, 680cp, 690cp,
Physical laboratory, B. A. Howlett.	700s, 710s, 740s, 760s, 790s, 880c,
Electrical laboratory, C. C. Knipmeyer.	910s.
Mechanical laboratory, Carl Wischmeyer.	
Chemical laboratory, John White.	
Shops, George W. Greenleaf.	

IOWA

AMES:	
Iowa State College-----	000i, 100cb, 110c, 240c, 500c, 510cp,
Agricultural chemistry laboratory, W. G. Gaessler.	530cph, 600cpm, 610cpm, 620cpm,
Chemical engineering laboratory, G. W. Burke.	630cpm, 640cpm, 650cpm, 680cpm,
Veterinary investigations laboratory, Charles Murray.	690cpm, 710s, 720s, 730s, 780s, 800c,
Farm crops laboratory, H. D. Hughes.	820c, 830c, 840c, 850c, 880c, 890c,
Soils laboratory, W. H. Stevenson.	910s.
Engineering experiment station, Anston Marston.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

IOWA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
GRINNELL:	
Grinnell College.....	020cp, 100a, 140cp, 160cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 670cp, 680cp, 690cp, 850cp.
Chemical laboratory, T. P. Sherman.	
Botany laboratory, H. S. Conard.	
Zoology laboratory, H. W. Norris.	
Physics laboratory, F. F. Almy.	
IOWA CITY:	
State University of Iowa.....	000cp, 010cp, 020cp, 040cp, 050c, 060c, 090c, 100c, 110c, 120c, 130c, 140cp, 150c, 160cp, 170c, 410p 500c, 510cp, 520c, 530cp, 540c, 550c, 570c, 590c, 600cp, 610cp, 620c, 630c, 640c, 650c, 680c, 690c, 700s, 710s, 750s, 800c, 810c, 820c, 830c, 870c, 880c, 890c.
Analytical chemistry laboratory, Stephen Popoff.	
Biological laboratory, Victor C. Myers.	
Industrial laboratory, H. L. Olin.	
Metallurgical laboratory, N. O. Taylor.	
Organic chemistry laboratory, L. Charles Raiford.	
Physical laboratory, J. N. Pearce.	
Sanitary laboratory, Edward Bartow.	
Pharmacy laboratory, Wilber J. Teeter.	
Engineering laboratory, C. C. Williams.	

KANSAS

BALDWIN CITY:	
Baker University.....	160cpb, 170cpb, 500cp, 640cp, 650cp, 680cp, 850c.
Chemistry laboratory, E. J. Cragoe.	
Physics laboratory, S. A. Deel.	
Botany laboratory, A. L. Hoffenrichter.	
LAWRENCE:	
University of Kansas.....	010abc, 020abct, 030abc, 040abcp, 100abc, 110abc, 120abc, 130abc, 140abc, 150abc, 160abc, 170abc, 200abc, 210abc, 220abc, 230abc, 240abc, 250abc, 260abc, 280abc, 290abc, 500achp, 510achp, 520achp, 530achp, 540achp, 550achp, 560achp, 570achp, 590achp, 600acm, 610acm, 620acm, 630acm, 640acm, 650acm, 680acm, 690acm, 700i, 710i, 740i, 750i, 800ac, 810ac, 820ac, 830ac, 840ac, 850ac, 860ac, 870ac, 880ac, 890ac.
Mechanical laboratory, A. H. Sluss.	
Electrical laboratory, G. C. Shaad.	
Chemistry laboratory, H. P. Cady.	
Hydraulics laboratory, F. M. Dawson.	
Metallurgical laboratory, E. D. Kinney.	
Highway engineering laboratory, W. C. McNoun.	
Experimental Engineering Laboratory, P. F. Walker.	
Bacteriological laboratory, N. P. Sherwood.	
Civil engineering laboratory, H. A. Rice.	
Railway engineering laboratory, F. A. Russell.	
Mining laboratory, C. M. Young.	
State chemical research laboratory, H. C. Allen.	
State food laboratory, Henry Werner.	
State drug laboratory, L. D. Havenhill.	
Water and sewage laboratory, E. Boyce.	
Entomology laboratory, H. B. Hungerford.	
MANHATTAN:	
Kansas State Agricultural College.....	010c, 020c, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 240bc, 250b, 280a, 300p, 500p, 510p, 530p, 600p, 700s, 710s, 720s, 730s 740s, 790s, 840c, 850c.
Mechanical engineering laboratory, J. P. Calderwood.	
Engineering experiment station, R. A. Seaton.	
Civil engineering laboratory, L. E. Conrad.	
Physics laboratory, J. O. Hamilton.	
Electrical laboratory, C. E. Reid.	
Chemistry laboratory, H. H. King.	
Agricultural engineering laboratory, H. B. Walker.	
Seed laboratory, R. I. Throckmorton.	
Botany laboratory, L. E. Melchers.	
Entomology laboratory, George A. Dean.	
Road materials testing laboratory, C. H. Scholer.	

KENTUCKY

LEXINGTON:	
University of Kentucky.....	
Agricultural experiment station, Thomas Cooper.	
Chemistry laboratory, F. E. Tuttle.	
Civil engineering laboratory, D. V. Terrell.	
Electrical engineering laboratory, W. E. Freeman.	
Mechanical engineering laboratory, L. S. O'Bannon.	
Mining engineering laboratory, C. S. Crouse.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

KENTUCKY—Continued

Location and name of laboratory	Commodities and nature of tests ¹
LOUISVILLE:	
University of Louisville----- Mechanical laboratory, B. M. Brigman. Physics laboratory, L. G. Raub. Civil engineering laboratory, W. B. Wendt. Electrical laboratory, D. C. Jackson, jr. Chemical laboratory.	410p, 510p, 600p, 610p, 700s, 710s, 830c.
LOUISIANA	
BATON ROUGE:	
Louisiana State University and Agricultural and Mechanical College----- Engineering experiment laboratory, T. W. Atkinson. Civil engineering laboratory, F. F. Pillet. Mechanical laboratory, L. J. Lassalle. Chemical laboratories, Messrs. Coates, Fieger, Freas, Horton, Menville, and Stewart.	020c, 040cp, 140c, 150c, 160c, 420c, 470c, 500pc(oils), 530p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 890p, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
NEW ORLEANS:	
The Tulane University of Louisiana, College of Engineering----- Experimental engineering laboratory, W. B. Gregory. Electrical engineering laboratory, Douglas Anderson. Industrial chemistry laboratory, C. S. Williamson, jr.	410p, 500c, 510p, 530p, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 710s, 800c, 820c, 830c, 840c, 870c, 880c, 890c, 910s.
PINEVILLE:	
Louisiana College----- Biology laboratory, O. B. Owens. Chemistry laboratory, H. G. Shaw. Physics laboratory, V. P. Ferguson.	170abc, 510ac, 600c, 610c, 620c, 630c, 640c, 650c, 670c, 810c, 820c, 840c, 850c, 870c, 880bc.
MAINE	
ORONO:	
University of Maine----- Maine agricultural experiment station, W. J. Morse. State highway laboratory, E. H. Sprague. Chemistry and chemical engineering laboratory, C. A. Brautlecht. Electrical laboratory, W. E. Barrows. Mechanical laboratory, W. J. Sweetser. Metallographical laboratory, W. J. Sweetser.	020c, 040acp, 060acp, 100acp, 110acp, 140acp, 150acp, 160acp, 170acp, 200acp, 210acp, 300acp, 310acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acp, 400p, 410p, 470acp, 490acp, 500acpm, 510acp, 530acp, 560acp, 570acp, 590acp, 600acpmh, 610acpm, 620acpm, 630- acpm, 640acpm, 650acpm, 660acpm, 680acpm, 690acpm, 700s, 710s, 760s, 800acp, 810acp, 820acp, 830acp, 840acp, 850acp, 870acp, 880acp, 890acp, 910acp, 970acp.
WATERVILLE:	
Colby College----- Chemistry laboratory, G. F. Parmenter. Geology laboratory, E. H. Perkins. Physics laboratory, N. E. Wheeler.	140c, 160c, 170c, 500c (coal), 590c, 800c, 810c, 830c.
MARYLAND	
BALTIMORE:	
The Johns Hopkins University----- Concrete materials laboratory, J. T. Thompson----- Highway materials laboratory, T. F. Comber, jr----- General materials testing laboratory, A. G. Christie.	400p, 510p, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 680pm, 690pm, 700s.
COLLEGE PARK:	
University of Maryland----- Civil engineering laboratory, S. S. Steinberg Electrical engineering laboratory, Myron Creese. Engineering experiment laboratory, A. N. Johnson.	510p, 600p, 610p, 700s, 710s.
EMMITSBURG:	
Mt. St. Mary's College----- Chemical laboratory, C. F. Mason, and J. McCormick.	200c, 370ci, 510c, 530c, 600c, 610c, 630c, 640c, 650c, 680c, 820cp, 840c, 850c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MASSACHUSETTS

Location and name of laboratory	Commodities and nature of tests ¹
AMHERST:	
Massachusetts Agricultural College.....	000b, 020bc, 110cia, 240i, 520 (dairy glassware), 850ci.
Fertilizer control laboratory, H. D. Haskins.	
Feed control laboratory, P. H. Smith.	
Seed control laboratory, Miss Margaret Hopkins.	
Bacteriological laboratory, G. E. Gage.	
Veterinary science laboratory, J. B. Lentz.	
Dairy glassware laboratory, P. H. Smith.	
Plant pathology laboratory, A. V. Osmun.	
BOSTON:	
Boston University.....	140c, 170c, 500c, 560ap, 600c, 620c, 640c, 650c, 800c, 810b, 820c, 840c, 850c, 870c, 880bc.
Chemical laboratory, Lyman C. Newell, E. O. Holmes, jr.	
Physics laboratory, Norton Adams Kent.	
CAMBRIDGE:	
Harvard University.....	600m, 610m, 620m, 630m, 640m, 650m, 680m, 690m, 710s, 800c, 820c, 830c, 880c, 890c, 910s.
Electrical laboratory, H. E. Clifford.	
Civil engineering laboratory, G. F. Swain.	
Metallurgical laboratory, Albert Sauveur.	
Mechanical laboratory, L. S. Marks.	
Chemical laboratory.	
Massachusetts Institute of Technology.....	020c, 040c, 140c, 150c, 160c, 170c, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa, 500c, 510cp, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 660pm, 680pm, 690pm, 700s, 710s, 720s, 800c, 820c, 830c, 860c, 870c, 880c, 890c, 910s.
Textile laboratory, G. B. Haven.	
Testing (engineering) materials laboratory, H. W. Hayward.	
Automotive laboratory, D. A. Fales.	
Mining laboratory, C. E. Locke.	
Industrial physics laboratory, C. L. Norton.	
Applied chemistry laboratory, R. T. Haslam.	
Physical chemistry laboratory, F. G. Keyes.	
Electrical engineering laboratory, D. C. Jackson.	
Organic chemistry laboratory, J. F. Norris.	
FALL RIVER:	
Bradford Durfee Textile School.....	300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp (rayon), 770s (textile).
LOWELL:	
Lowell Textile School.....	230c, 250c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 500ch, 800c, 840c, 870c.
Textile chemistry laboratory, Louis A. Olney.	
Textile design laboratory, Hermann H. Bachmann.	
Textiles—physical laboratory, Edgar H. Barker.	
TUFTS COLLEGE:	
Tufts College.....	010c, 020c, 030c, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 160cp, 170cp, 230c, 300c, 400pc, 470c, 490c, 500c, 510pc, 520c, 530c, 540c, 550c, 570c, 590c, 600pc, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 710sp, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Civil engineering laboratory, G. C. Anthony.	
Physics laboratory, G. P. Bacon.	
Thermodynamics laboratory, C. H. Chase.	
Mechanical laboratory, E. MacNaughton.	
Electrical laboratory, M. S. Munro.	
Chemistry laboratory, F. W. Durkee.	
Strength of materials laboratory, E. H. Wright.	
WORCESTER:	
Worcester Polytechnic Institute.....	020c, 030c, 040c, 060c, 120c, 130c, 140c, 150c, 160c, 170c, 200cp, 210c, 220c, 230c, 280c, 310c, 410p, 500cp, 510cph, 520ca, 550p, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 700s, 710s, 720s, 740s, 750s, 760s, 780s, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 910s.
Electrical laboratory, H. B. Smith.	
Chemistry laboratory, W. L. Jennings.	
Physics laboratory, A. W. Duff.	
Mechanical laboratory, F. W. Roys.	
Civil engineering laboratory, A. W. French.	

MICHIGAN

ANN ARBOR:

University of Michigan.....	060p, 400p, 500c, 510p, 530p, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 660pm, 680pm, 690pm, 700s, 710s, 720s, 760s, 800c, 820c, 830c, 840cp, 880c, 890c, 910s.
Engineering research laboratory, A. E. White.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MICHIGAN—Continued

Location and name of laboratory	Commodities and nature of tests ¹
DETROIT:	
University of Detroit----- Automotive engineering laboratory, J. J. Caton. Civil engineering laboratory, D. P. Gilmore. Electrical engineering laboratory, H. O. Warner. Mechanical laboratory, R. E. Lawrence. Chemical laboratory, John P. Morrissey. Physics laboratory, James L. McGearry.	040cpa, 200cpa, 300cpa, 310cpa, 330cpa, 360cpa, 410a, 500apc, 510apc, 520apc, 530apc, 540apc, 570apc, 600acmp, 630acmp, 640acmp, 650acmp, 700ps, 710s, 720s, 800ac, 810ac, 820ac, 840ac, 850ac, 870ac, 880ac, 890ac.
EAST LANSING:	
Michigan State College----- Engineering experiment station, G. W. Bissell. Mechanical laboratory, H. B. Dirks. Electrical laboratory, L. S. Foetz. Civil engineering laboratory, Chester Allen. Metallurgical laboratory, E. D. Kinney. Agricultural experiment laboratory, R. S. Shaw. Chemistry laboratory, Arthur J. Clark. Bacteriology laboratory, Ward Giltner. Beal botanical laboratory, Ernst A. Bessey. Wood technology laboratory, A. K. Chittenden. Milk and cream laboratory, O. E. Reed. Home economics laboratory, Jean Krueger. Farm crops laboratory, J. F. Cox.	000b, 010cb, 020cb, 030c, 040c, 100cb, 110cb, 120c, 130c, 140c, 150c, 160cb, 170cb, 220cb, 230c, 240c, 300c, 310c, 320c, 330b, 340c, 360c, 370c, 390c, 400pi, 410p, 490c, 500c, 510p, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 700s, 710s, 730s, 760s, 800cb, 810cb, 820c, 830c, 840c, 880cb, 890c.
HOUGHTON:	
Michigan College of Mines----- Assaying laboratory, A. T. Sweet. Testing laboratory, George Christensen. Chemical laboratory, C. M. Carson. Metallographic laboratory, J. L. Young. Ore Dressing laboratory, N. H. Manderfield.	500c, 600cm, 610cm, 620cm, 640cm, 650cm, 680cm, 690cm.
MINNESOTA	
MINNEAPOLIS:	
University of Minnesota----- Engineering materials laboratory, G. C. Priester. Hydraulics laboratory, J. O. Jones. Highway engineering laboratory, F. C. Lang. Structural engineering laboratory, J. I. Parcel. Heating, ventilation, and refrigeration laboratory, F. B. Rowley. Steam and power plants laboratory, C. F. Shoop. Internal combustion engines laboratory, B. J. Robertson. Electric power laboratory, W. T. Ryan. Electric instruments laboratory, F. W. Springer. Telephone and telegraph laboratory, G. W. Swenson. Photometric and illumination laboratory, E. W. Johnson. Radio laboratory, C. M. Jansky, jr. Shop machinery laboratory, S. C. Shipley. Technological chemistry laboratory, E. P. Harding. Analytical chemistry laboratory, I. W. Geiger. Chemical engineering laboratory, C. A. Mann. Agricultural machinery laboratory, William Boss. Metallurgy laboratory, W. R. Appleby. Metallography laboratory, O. E. Harder. Mining machinery laboratory, E. W. Davis. Pharmacy laboratory, F. J. Wulling. Forestry products laboratory, H. Schmitz. Biochemistry laboratory, R. A. Gortner. Plant pathology laboratory, E. C. Stakman. Soils laboratory, F. J. Alway. Pathology laboratory, E. T. Bell. Pharmacology laboratory, A. D. Hirschfelder. Seeds laboratory, A. H. Larson.	020c, 040cp, 060p, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 220c, 240c, 260c, 280c, 300ca, 310ca, 320ca, 330ca, 340ca, 360ca, 370ca, 400p, 410p, 420p, 430p, 470pa, 480pa, 490pa, 500cp, 510ep, 530cp, 600cp, 610p, 620p, 630p, 640p, 650p, 680p, 690p, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800pet, 810c, 820c, 830c, 840c, 850c, 910s, 930cp.
ST. PAUL:	
Hamline University----- Biology laboratory, H. L. Osborn and Walter A. Kenyon. Chemistry laboratory, G. W. Muhleman. Physics laboratory, J. M. Repgaard.	020c, 030ab, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 240cab, 280c, 500c, 600c, 630c, 640c, 650c, 800c, 830c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MISSISSIPPI

Location and name of laboratory	Commodities and nature of tests ¹
AGRICULTURAL COLLEGE:	
Mississippi Agricultural and Mechanical College----- Electrical laboratory, L. L. Patterson. Mechanical laboratory, R. C. Carpenter. Chemical laboratory, W. F. Hand. Physics laboratory, H. W. Moody. Bacteriological laboratory, C. F. Briscoe. Entomological laboratory, R. W. Harned. Agronomy laboratory, A. D. Suttle. Botany laboratory, J. M. Beal.	040c, 050c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 410p, 500ch, 510p, 600p, 610p, 700s, 710s, 820c, 830c, 850c.
CLINTON:	
Mississippi College----- Chemical laboratory, A. E. Wood.	140c, 210c, 500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 680c, 690c, 820c, 830c, 840c, 870c, 890c.
UNIVERSITY:	
University of Mississippi----- Chemical laboratory, J. N. Swan. Physical laboratory, W. L. Kennon. Biological laboratory, L. E. Thatcher. Medical laboratory, J. O. Crider. Engineering laboratory, J. H. Dorroh. Pharmacy laboratory, H. M. Faser.	500ch, 510p, 600cp, 610cp, 700s, 710s.

MISSOURI

COLUMBIA:	
University of Missouri----- Botany laboratory, W. J. Robbins. Zoology laboratory, W. C. Curtis. Engineering laboratories, E. J. McCaustland. Chemistry laboratory, Herman Schlundt. Geology laboratory, E. B. Bransen. Mineralogical laboratory, W. A. Tarr. Agricultural chemistry laboratory, A. G. Hogan. Agricultural engineering laboratory, J. C. Wooley. Dairy laboratory, A. C. Ragsdale. Entomology laboratory, Leonard Haseman. Field Crops laboratory, W. C. Etheridge. Horticulture laboratory, T. J. Talbert. Soils laboratory, M. F. Miller. Veterinary laboratory, J. W. Connaway.	000abt, 010abct, 020abcpt, 030a, 040acpl, 050abt, 070a, 100abc, 110c, 120ac, 130ac, 140a, 170b, 220a, 230a, 240abc, 250ab, 340a, 400aips, 410aips, 420ips, 500clpa, 510aips, 530ap, 550ap, 590ap, 600ips, 610ips, 700is, 730a, 850c, 870a, 880a, 990cpa.
ROLLA:	
Missouri School of Mines and Metallurgy----- Chemical laboratory, W. D. Turner. Civil (testing) laboratory, E. G. Harris. Biology laboratory, C. J. Millar. Geology laboratory, C. L. Dake. Mechanical laboratory, R. O. Jackson. Electrical laboratory, F. H. Frame. Mining laboratory, C. R. Forbes. Metallurgy laboratory, C. Y. Clayton. Ceramic laboratory, M. E. Holmes. Experiment station laboratory, M. H. Thornberry.	400p, 410p, 500ch, 510pc, 520pc, 530pc, 540pc, 590pc, 600acmp, 610acmp, 620acmp, 630acmp, 640acmp, 650acmp, 680acmp, 690acmp, 700s, 710s, 750s, 800c, 820c, 830c, 880bc, 910s.
St. LOUIS:	
Washington University----- Civil engineering laboratory, J. L. Van Ornum. Mechanical engineering laboratory, E. L. Ohle. Electrical engineering laboratory, W. L. Upson. Chemical engineering laboratory, L. McMaster. Industrial engineering laboratory, A. S. Langsdorf.	020c, 040c, 060p, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 280c, 410p, 500cphl, 510p, 530p, 550c, 570c, 600cpm, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700s, 710s, 740s (conveying), 800c, 810c, 820c, 830c, 840c, 850c, 870c, 890c, 910s.
SPRINGFIELD:	
Drury College----- Chemistry laboratory, R. Neal. Biology laboratory, J. E. Cribbs. Physics laboratory, B. F. Finkel. Geology laboratory, D. S. Libbey.	170c, 830c (poisons), 840c, 850c, 880cb, 890c.

¹ See pp. 1 and 2

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MONTANA

Location and name of laboratory	Commodities and nature of tests ¹
BOZEMAN:	
Montana State College of Agriculture and Mechanic Arts. Engineering experiment laboratory, E. B. Norris. Mechanical laboratory, R. T. Challender. Civil engineering laboratory, L. D. Conkling. Electrical laboratory, J. A. Thaler. Chemical laboratory, W. M. Cobleigh and Edmund Burke. Grain inspection laboratory, W. O. Whitcomb. Bacteriological laboratory, D. B. Swingle. Dairy Products laboratory, J. A. Nelson. Entomological laboratory, R. A. Cooley.	410p, 500cp, 510p, 600p, 610p, 700s, 710s.
BUTTE:	
Montana State School of Mines Metallurgical laboratory, G. J. Roush. Mill laboratory, M. F. Haley. Physical laboratory, E. R. Bowersox.	410p, 500hp, 510p, 530p, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 690cpm, 700s, 710s, 750s.

NEBRASKA

LINCOLN:	
University of Nebraska Bacteriological laboratory, H. H. Waite. Botany laboratory, R. J. Pool. Chemistry laboratory, F. W. Upson. Dairy husbandry laboratory, H. P. Davis. Agricultural engineering laboratory, O. W. Sjorgren. Civil engineering laboratory, C. E. Mickey. Electrical engineering laboratory, O. J. Ferguson. Mechanical engineering laboratory, J. W. Haney. Applied engineering mechanics laboratory, G. R. Chaburn. Entomology laboratory, M. H. Swenk. Physics laboratory, H. H. Marvin. Soils laboratory, W. W. Burr. Zoology laboratory, R. H. Wolcott.	100cp (flour), 250i, 510p, 530p, 710s, 730s (tractors), 910s.
OMAHA:	
Creighton University Industrial chemistry, J. C. Krance. Medicinal chemistry, V. Levine. Pharmaceutical chemistry, C. W. Bauer. Dental chemistry, C. F. Crowley.	000ct, 010ct, 020ct, 030ct, 040ct, 100c, 110c, 120c, 130c, 140c, 160cp, 170c, 220c, 280c, 500cp, 510p, 520c, 530c, 540cp, 550c, 570c, 590ct, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 840c, 850c, 860c, 870ct, 880c, 890ct, 970cp.

NEVADA

RENO:	
University of Nevada Metallurgical laboratory, Walter Palmer. Food and drug laboratory, S. C. Dinsmore. Engineering research laboratory, H. P. Boardman. Wool laboratory, F. C. Wilson. Agricultural research laboratory, S. B. Doten. Chemistry laboratory, George W. Sears.	020cb, 040cb, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 360cp, 500chl, 510p, 550c, 570c, 590cp, 600cpm, 630cpm, 640cpm, 650cpm, 690cpm, 700s, 710s, 730s, 740s, 750s, 810c, 820c, 850c, 880cb.

NEW HAMPSHIRE

DURHAM:	
University of New Hampshire Agricultural experiment laboratory, J. C. Kendall. Engineering laboratory, George W. Case.	020cpb, 100cp, 110cp, 120c, 130c, 140c, 160c, 240c, 250p, 280c, 360p, 400cp, 410cp, 420cp, 430cp, 470cp, 480cp, 490cp, 500ch, 510p, 600p, 730s, 850cp.
HANOVER:	
Dartmouth College Chemistry laboratory, L. B. Richardson. Physics laboratory, C. A. Proctor. Biology laboratory, Leland Griggs. Medical school laboratory, C. C. Stewart. Civil engineering laboratory, R. R. Marsden.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEW JERSEY

Location and name of laboratory	Commodities and nature of tests ¹
NEWARK:	
Newark Technical School.....	510p, 600pc, 610pc, 700s, 710s, 910s.
Civil engineering laboratory, H. W. Hellman.	
Electrical laboratory, J. C. Peet.	
Chemical laboratory, V. T. Stewart.	
Mechanical laboratory, J. A. Brooks.	
NEW BRUNSWICK:	
Rutgers University and New Jersey State Agricultural Experiment Station.	000cb, 020cb, 060c, 090c, 110ca, 200c, 210c, 240c, 250b, 410p, 500c, 510p, 520c, 530c, 540c, 550i, 560i, 570c, 590ci, 600cp, 630cp, 640cp, 650c, 680cp, 690cpi, 710s, 730s, 800c, 840c, 850c, 890c.
Control laboratory, Charles S. Cathcart.	
Ceramics laboratory, George H. Brown.	
Geological laboratory, J. Volney Lewis.	
Chemistry laboratory, R. G. Wright.	
Engineering laboratory, E. H. Rockwell.	
Rural engineering laboratory, E. R. Gross.	
Dairy laboratory, John R. Bartlett.	
Plant pathology laboratory, W. H. Martin.	
Poultry pathology laboratory, Fred R. Baudette.	
Agricultural biochemistry laboratory, W. C. Russell.	
Seed laboratory, Miss Jessie G. Fiske.	
Entomological laboratory, T. J. Headlee.	
Soil chemistry and bacteriology laboratory, A. W. Blair, and J. G. Lipman.	
PRINCETON:	
Princeton University.....	410p, 500ch, 510p, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700s, 710s, 910s.
Electrical laboratory, M. MacLaren.	
Mechanical laboratory, A. M. Greene.	
Civil engineering laboratory, F. H. Constant.	
Chemical laboratory, H. L. Taylor.	
Physics.	

NEW MEXICO

ALBUQUERQUE:	
The State University of New Mexico.....	020b, 040cb, 100cb, 120cb, 130cb, 140cb, 150cb, 160cb, 170cb, 360h, 400ps, 410ps, 500csp, 510c, 520aps, 540sp, 630c, 640emp, 650emp, 680cps, 690csp, 700s, 710s, 820cs, 830cs, 850cs, 880cs, 910s.
Electrical laboratory, P. S. Donnell.	
Materials testing laboratory, A. Diefendorf.	
Hydraulic laboratory, A. Diefendorf.	
Chemistry laboratory, J. D. Clark.	
Biology laboratory, H. E. Murphy.	
Physical laboratory, R. S. Rockwood.	
Geology laboratory, R. W. Ellis.	
Psychology laboratory, B. F. Haught.	
Home economics laboratory, Mrs. Walter Simpson.	
SOCORRO:	
New Mexico School of Mines.....	500c, 510pc, 530pc, 550pc, 570pc, 590pc, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 850c, 880c.
Metallurgical laboratory, A. S. Walter.	
Chemical laboratory, A. R. Ferguson.	
Concrete laboratory, Thos. H. McCarthy.	
STATE COLLEGE:	
New Mexico College of Agriculture and Mechanic Arts.....	410p, 500chp, 510p, 530p, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 680pm, 690pm, 700p, 710ps, 760p, 910ps.
Materials testing laboratory, H. O. Garst.	
Mechanical engineering laboratory, H. M. Milton, jr.	
Electrical engineering laboratory, R. W. Goddard.	

NEW YORK

ALFRED:	
Alfred University.....	020c, 170c, 220c, 500hl, 510c, 530ch, 600c, 810c, 820c, 830c, 870c, 880c.
Analytical laboratory, A. H. Radasch.	
Inorganic chemistry laboratory, Paul C. Saunders.	
New York State School of Ceramics.	
BROOKLYN:	
Polytechnic Institute of Brooklyn.....	360h, 400p, 410p, 500p, 510p, 540h, 600p, 610p, 620p, 630p, 640p, 650p, 690p, 700s, 710s, 720s, 740s, 750s, 760s, 780s, 790s, 800c, 820c, 830c, 840c, 880c, 910s.
Material testing laboratory, William J. Moore.	
Mechanical laboratory, William J. Moore.	
Industrial chemical laboratory, J. C. Olsen.	
Physics laboratory, Erich Hausman.	
Electrical laboratory, Robin Beach.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEW YORK—Continued

Location and name of laboratory	Commodities and nature of tests ¹
BROOKLYN—Continued.	
Pratt Institute.....	040c, 050cp, 060cp, 140c, 170c, 200c, 210c, 230c, 280c, 400p, 410p, 500ch, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600cp, 610cpm, 620cpm, 630cp, 640cp, 650cp, 660c, 670c, 680cp, 690cp, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800c, 820c, 830c, 840cp, 850c, 860c, 870c, 880c, 890c.
ELMIRA:	
Elmira College.....	150c, 160c, 500c, 590c, 600c, 640c, 690c, 870c, 890c.
ITHACA:	
Cornell University.....	020bc, 100cp, 110cp, 240i, 500h (coal, petroleum), 510p, 530p, 600p, 630p (aluminum, antimony), 640p, 700s, 750s (pumping), 780s, 850cp.
NEW YORK CITY:	
College of the City of New York.....	040c, 140c, 150c, 300p, 470p, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630c, 640c, 650c, 680c, 690c, 700s, 710s, 720s, 760s, 790s, 800c, 820c, 830c, 840c, 850c, 860c, 890c, 910hpx, 970c.
Columbia University.....	410p, 500c, 510p, 530p, 560c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 710s, 880c.
Cooper Union Institute of Technology.....	300p, 410p, 470p, 510p, 530p, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 680pm, 690pm, 710s.
Hunter College of the City of New York.....	020cba, 100c, 140c, 240c, 300ca, 330ca, 360ca, 370ca, 640c, 650c, 680c, 810c, 850c.
Manhattan College.....	150c, 810c.
New York University.....	020c, 040cp, 050p, 060p, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 300cp, 320ca, 330ca, 340ca, 360ca, 370ca, 390ca, 410p, 470cp, 500cp, 510ep, 530cp, 540cp, 570cp, 590cp, 600p, 610p, 620pc, 630cp, 640cp, 680cp, 690cp, 700s, 710s, 720s, 750s, 780s, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 910sc, 920s, 950c, 970c.
POTSDAM:	
Clarkson College of Technology.....	500ch, 510p, 600cp, 610cp, 700s, 710s.
POUGHKEEPSIE:	
Vassar College.....	020c, 040c, 100c, 140c, 160c, 500c, 510c (cement), 600c, 610c, 620c, 630c, 640c, 650c, 680c, 710p, 890c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEW YORK—Continued

Location and name of laboratory	Commodities and nature of tests ¹
ROCHESTER:	
University of Rochester----- Chemistry laboratory, V. J. Chamber. Physics laboratory, H. E. Lawrence. Mechanical engineering laboratory, J. W. Gavett, jr. Medical school laboratory, G. H. Whipple.	500lh, 510p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p, 780s (boiler performance).
SARATOGA SPRINGS:	
Skidmore College----- Chemistry laboratory, Alton L. Markley.	010c, 020c, 040c, 140c, 160ca, 300ca, 360ca, 370ca, 470ca, 500c, 640c, 650c, 850c, 870c, 880c.
SCHENECTADY:	
Union College----- Electrical engineering laboratory, Hugh Miller. Civil engineering laboratory, F. P. McKibben. Materials testing laboratory, M. F. Sayre. Chemical laboratory, Edward Ellery. Physics laboratory, P. I. Wold.	020c, 040c, 100c, 120c, 130c, 140c, 500c, 510p, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cp, 680cpm, 690cpm, 880c.
SYRACUSE:	
Syracuse University----- Materials testing laboratory, Louis Mitchell. Chemical laboratory, R. S. Boehner. Botanical laboratory, W. L. Bray. Hydraulic laboratory, S. D. Sibley. Electrical laboratory, H. W. Henderson. Physical laboratory, R. A. Porter. Zoological laboratory, W. M. Smallwood. Bacteriological laboratory, H. N. Jones. Mechanical laboratory, L. N. Street.	000p, 010pc, 020cb, 040cp, 100ac, 110cs, 120p, 140ac, 150pc, 160c, 170c, 220c, 240a, 250i, 300ac, 330cp, 400p, 410p, 420p, 470cp, 500cp, 510cp, 520c, 530c, 540c, 550c, 570c, 590p, 600cp, 610p, 620c, 630c, 640cp, 650cp, 660c, 680c, 690cp, 710s, 800pc, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
TROY:	
Rensselaer Polytechnic Institute----- Electrical engineering laboratory, W. L. Robb. Physical laboratory, R. A. Patterson. Engineering materials laboratory, Thomas R. Lawson. Chemical laboratory, A. W. Davison. Biological laboratory, A. W. Bray. Mechanical engineering laboratory, E. A. Fessenden.	020c, 040c, 060m, 110c, 120c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 410p, 500chms, 510p, 520c, 530cp, 540c, 550c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700hilps, 710ips, 720hilps, 760ilps, 780ilps, 790ips, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c, 910s, 930c, 970c.
NORTH CAROLINA	
CHAPEL HILL:	
University of North Carolina----- Chemical engineering laboratory, F. C. Vilbrandt. Electrical engineering laboratory, P. H. Daggett. Materials testing laboratory, H. F. Janda. Highway testing laboratory, H. F. Janda. Sanitary engineering laboratory, H. G. Baity. Mechanical engineering laboratory, E. G. Hooper.	020b, 410p, 500chl, 510p, 530p, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 710s, 880bc, 910s.
RALEIGH:	
North Carolina State College of Agriculture and En- gineering. Nutritional laboratory, Doctor Halverson. Textile research laboratory, Thomas Nelson. Engineering research laboratory, H. B. Shaw. Cotton fiber research laboratory, R. Y. Winters. Soil chemistry laboratory, L. G. Willis. Chemical engineering laboratory, E. E. Randolph.	300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp (rayon), 410p, 500hl, 510cp, 530c, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p, 710s, 820c, 850cs, 880c, 910s.
WINSTON SALEM:	
Salem College----- Chemical laboratory, Charles H. Higgins. Biological laboratory, Roy J. Campbell.	000ab, 010cb, 020cb, 030cb, 040cb, 090abc, 120cb, 130cb, 140c, 150ca, 160c, 170cb, 230c, 240b, 260ca, 280ca, 290cba, 300ca, 360ca, 370ca, 390ca, 500c, 510c, 600c, 610c, 640c, 660c, 800c, 820c, 830ca, 840ca, 850cb, 860c, 870ca, 880cba, 890ca, 910s, 930cs, 970c, 990cba.

¹See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NORTH DAKOTA

Location and name of laboratory	Commodities and nature of tests ¹
FARGO:	
North Dakota Agricultural College.....	000i, 090bt, 100c, 240c, 410p, 510p, 600p, 610p.
Animal husbandry laboratory, J. H. Shepperd.	
Pure seed laboratory, H. L. Bolley.	
Serum institute laboratory, A. F. Schalk.	
Poultry department laboratory, O. A. Barton.	
Cereals laboratory, C. E. Mangels.	
GRAND FORKS:	
University of North Dakota.....	500ch, 510cp, 530pc, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 710s, 880c, 910s.
Division of mines and mining experiment laboratory, A. W. Gauger.	

OHIO

ADA:	
Ohio Northern University.....	030ab, 050ab, 070ab, 500ch, 510p, 600p, 610p, 710s, 820c, 970i.
Chemical laboratory, F. C. Slesman.	
Civil engineering laboratory, A. R. Webb.	
Electrical laboratory, I. St. Clair Campbell.	
Physics laboratory, F. L. Berger.	
Mechanical laboratory, John A. Needy.	
Biological laboratory, H. E. Huber.	
AKRON:	
Municipal University of Akron.....	020cb, 040c, 100cb, 110c, 120c, 130c, 140c, 170c, 200cp, 300p, 410p, 500hp, 510p, 530cp, 600cm, 610cm, 630cm, 640cm, 820c, 840c, 880cb, 890c.
Bureau of city tests laboratory, E. E. Schaefer.	
Knight chemical laboratory, H. E. Simmons.	
Bacteriological laboratory, R. D. Fox.	
Biological laboratory, A. B. Plowman.	
Physical laboratory, Ross C. Durst.	
ATHENS:	
Ohio University.....	000b, 030b, 090b, 120b, 240b, 290b, 400p, 410p, 500c, 510p, 530c, 600cp, 630c, 640cp, 650c, 680c, 690c, 700s, 710ps, 890c, 910sp.
Physics and electrical laboratories, A. A. Atkinson.	
Civil engineering laboratory, L. J. Addicott.	
Chemical laboratories, W. B. Bentley, J. R. Morton.	
Biology and botany laboratories, W. A. Matheny.	
Zoology and embryology laboratories, W. F. Mercer.	
Physiology laboratory, E. Rowles.	
Anatomy laboratory, R. Elliott.	
Bacteriology laboratory, C. Frey.	
Psychology laboratory, J. P. Porter.	
CINCINNATI:	
Ohio Mechanics Institute.....	500c, 510p, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp.
University of Cincinnati.....	040a, 050abc, 060abcp, 140acp, 160a, 170c, 200cps, 210acp, 220c, 230c, 260acp, 300p, 310aps, 400p, 410p, 470s, 490s, 500ch, 510acp, 520acp, 530acp, 550p, 560p, 590p, 600acmpsx, 610cp, 620cmp, 630cmp, 640acmpsx, 650c, 680cmp, 690cm, 760p, 800c, 810c, 820c, 830c, 840acps, 850c, 860c, 870ac, 880abc, 890c, 910s, 920p, 930icps, 950p.
Industrial research laboratory, Herman Schneider.	
Chemical laboratory, R. S. Tour.	
Mechanical laboratory, A. L. Jenkins.	
Civil engineering laboratory, H. B. Luther.	
Electrical laboratory, A. M. Wilson.	
Physical laboratory, Nevin M. Fenneman.	
Tanner's council laboratory, George D. McLaughlin.	
Lithographic research laboratory, R. F. Reed.	
CLEVELAND:	
Case School of Applied Science.....	020cp, 040cp, 060p (belting), 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200psc (belting), 210c, 220c, 230c, 280c, 290c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 400p, 410p, 420p, 500cphl, 510cp, 520c, 530cp, 540c, 550c, 560c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cm, 690cm, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 910s, 920s.
Physics laboratory, Dayton C. Miller.	
Electrical laboratory, Henry B. Dates.	
Mechanical laboratory, F. H. Vose.	
Chemical laboratory, A. W. Smith.	
Materials testing laboratory, R. H. Danforth.	

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

OHIO—Continued

Location and name of laboratory	Commodities and nature of tests ¹
COLUMBUS:	
Ohio State University----- Industrial chemical and chemical engineering laboratory, James R. Withrow. Metallurgical laboratory, D. J. Demorest. Mechanical engineering laboratory, William T. Ma- gruder. Chemical laboratory, William McPherson.	000c, 010c, 020c, 030c, 060p, 100c, 110c, 120c, 130c, 140cp, 160c, 200cp, 210c, 220c, 230c, 240c, 280c, 290c, 300cp, 310c, 330cp, 340cp, 360cp, 390cp, 410p, 500cph, 510cp, 520p, 530ch, 540c, 550c, 560ca, 570c, 590c, 600cpmx, 610cpmx, 620cpmx, 630- cpmx, 640cpmx, 650cpmx, 660cpmx, 680cpmx, 690cpmx, 700s, 720s, 740s, 750s, 760s, 770s, 780s, 790s, 800c, 820c, 830c, 840c, 850c, 880c, 890c.
DAYTON:	
University of Dayton----- Mechanical laboratory, Adam Hoffman. Civil engineering laboratory, Bernard Schad. Electrical laboratory, Ulrich Rappel. Chemical laboratory, William Wohlleben. Biological laboratory, Francis Molz, and William Beck.	010c, 020c, 040c, 110c, 140c, 160c, 170c, 200c, 260c, 280c, 400p, 500p, 510p, 570c, 590c, 600cp, 610c, 620c, 630c, 640cp, 650c, 680c, 690c, 710s, 800c, 820c, 830c, 840c, 850c, 870c, 890c.
DELAWARE:	
Ohio Wesleyan University----- Food and water analysis laboratory, G. O. Higley. Organic chemistry laboratory, E. C. Hylin. Physical chemistry laboratory, A. J. Joney.	020c, 100c, 110c, 140c, 150c, 160c, 170c, 500c, 510c, 520c, 530c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 850c, 880c.
GRANVILLE:	
Denison University----- Chemistry laboratory, W. C. Ebaugh.	500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 840c, 880c, 890c.
NEW CONCORD:	
Muskingum College----- Chemistry laboratory, J. G. Ralston. Biology laboratory, E. R. Bryant. Physics laboratory, Paul Nortin. Geology laboratory, C. F. Moses.	600p, 670s, 710s, 850c, 870c, 880c, 910ps.
OXFORD:	
Miami University----- Chemical laboratory, H. C. Brill. Physical laboratory, R. Edwards. Geological laboratory, W. H. Shideler. Zoological laboratory, S. R. Williams. Botanical laboratory, M. L. Lohman. Biological laboratory, B. M. Davis.	020abc, 040c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 250ab, 300c, 310c, 370c, 500c, 520ap, 530ap, 550a, 560a, 570c, 590a, 600ac, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 700s, 710s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 910s.
YELLOW SPRINGS:	
Antioch College----- Physics laboratory, John G. Frayre. Biology laboratory, O. L. Inman. Chemistry laboratory, C. S. Adams. Geology laboratory, A. C. Swinerton. Bacteriology laboratory, H. A. Hoffman.	010ab, 020ab, 030ab, 100c, 110c, 140c, 150c, 170c, 500ac, 510ac, 530ac, 570ac, 590ac, 600acm, 620acm, 630acm, 640acm, 650acm, 660acm, 680acm, 690acm, 710s.

OKLAHOMA

CHICKASHA:	
Oklahoma College for Women----- Chemistry laboratory, Edith Hammond. Textile laboratory, Imo Baughman.	010ac, 020ac, 040ac, 100ac, 120ac, 140ac, 150ac, 160ac, 170acb, 300ac, 360ac, 370ac.
ENID UNIVERSITY STATION:	
Phillips University----- Biology laboratory, J. C. Shirley. Chemical laboratory, A. F. Reiter. Geology laboratory, E. L. Lucas.	620m, 690m, 820c, 830c, 880b.
NORMAN:	
University of Oklahoma----- Mechanical laboratory, G. B. Helmrich. Electrical laboratory, F. G. Tappan. Petroleum laboratory. Civil engineering laboratory, J. F. Brooks. Physics laboratory, H. L. Dodge. Chemical laboratory.	410p, 500ch, 510p, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700s, 710s, 820c, 830c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

OKLAHOMA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
STILLWATER:	
Oklahoma Agricultural and Mechanical College----- Chemistry laboratory, V. G. Hellar. General chemistry laboratory, O. M. Smith. Dairy products laboratory, A. D. Burke. Soils laboratory, H. J. Harper. Mechanical engineering laboratory, R. L. Rhoads.	020c, 100c, 110c, 140c, 240p, 410p, 500c, 510cp, 600cp, 610cp, 850c.
OREGON	
CORVALLIS:	
Oregon Agricultural College----- Seed laboratory. Grain and forage laboratory, and experimental farm laboratory, G. R. Hyslop. Materials testing laboratory, S. H. Graf. Mechanical laboratory, J. R. DuPriest. Mines laboratory, C. E. Newton. Bacteriological laboratory, G. V. Copson. Chemical engineering laboratory, F. E. Rowland. Electrical engineering laboratory, F. O. McMillan. Hydraulic laboratory, H. S. Rogers----- Physical laboratory, W. Weniger-----	000c, 020cab, 030b, 040c, 090acip, 100api, 110capi, 120c, 130acip, 140- acip, 170b, 200s, 210acip, 220acip, 230acip, 240api, 290pab, 300ac, 320ac (fiber silk), 330ap, 340api, 360ac, 370ac, 400p, 410p, 420acips, 470ps, 500hlpmac, 510acimp, 530achimps, 540achimp, 550achimps, 560acimp, 570achimp, 590achimp, 600hmp, 610i, 620achmp, 630hmp, 640hmp, 650hmp, 660achmp, 670achmp, 680hmp, 690- hmp, 700psi, 710ps, 720ps, 730s, 750psi, 790ps, 830acip, 850acip, 880b, 910ps.
EUGENE:	
University of Oregon----- Chemistry laboratory, O. F. Stafford	420c (wood products), 500c (fuels), 600c, 690c.
PORTLAND:	
Oregon Institute of Technology----- Structural materials laboratory, W. T. Williams. Electrical laboratory, Walter Haynes.	410p, 500chl, 510p, 600p, 610p, 710s, 910s.
PENNSYLVANIA	
BETHLEHEM:	
Lehigh University----- Chemistry laboratory, H. M. Ullman. Materials laboratory, R. J. Fogg. Mining laboratory, Howard Eckfeldt. Metallurgy laboratory, Bradley Stoughton. Mechanical laboratory, M. C. Stuart. Electrical laboratory, William Esty. Physics laboratory, Barry MacNutt.	020cp, 040cp, 060p, 140cp, 160cp, 200p, 410p, 500c, 510p, 530c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 700s, 710s, 750s, 800c, 820c, 830c, 840c, 860c, 870c, 890c, 910s.
EASTON:	
Lafayette College----- Mining laboratory, W. B. Plank. Civil engineering laboratory, F. O. Dufour. Mechanical laboratory, D. B. Prentice. Chemical laboratory, E. C. Bingham. Electrical laboratory, M. King. Railroad engineering laboratory, H. T. Spengler.	330p, 410p, 500ch, 510p, 600p, 610p, 700s, 710s, 720s, 760s, 790s, 820c, 830c.
GETTYSBURG:	
Gettysburg College----- Chemical laboratory, John B. Zinn. Electrical and mechanical laboratory, R. Rosenstengel. Civil engineering laboratory, Frank H. Clutz.	020c, 140c, 170c, 410p, 510p, 600p, 850c.
LEWISBURG:	
Bucknell University----- Industrial and chemical engineering laboratory, S. C. Ogburn, jr. Bacteriological laboratory, J. W. Rice. Biochemical laboratory, O. S. Grover. Biological laboratory, N. F. Davis. Mechanical engineering laboratory, F. E. Burpee. Physics laboratory, F. M. Simpson. Civil engineering laboratory, D. M. Griffith.	020cb, 040cp, 170c, 260cp, 300cp, 410p, 470c, 490c, 500pc (coal), 510p, 530pc, 450c, 600pc, 610pc, 640c, 650c, 660c (platinum), 820c, 830c, 840c, 850c, 880cb, 890c, 970cp.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

PENNSYLVANIA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
PHILADELPHIA:	
Drexel Institute----- Electrical engineering laboratory, R. C. Disque. Testing laboratory, H. L. Bowman. Mechanical engineering laboratory, J. H. Billings. Chemical laboratory, L. D. Stratton.	500ch, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 710s, 840c, 880c.
University of Pennsylvania----- Mechanical engineering laboratory, R. H. Fernald. Experimental engineering laboratory, W. H. Kavanaugh. Electrical engineering laboratory, Harold Pender. Chemical laboratory, O. L. Shinn. Materials of construction laboratory, H. C. Berry. Hydraulics laboratory, W. S. Pardoe. Road materials laboratory, W. H. Barton.	020c, 040c, 140c, 150c, 160c, 170c, 500cis, 510cpm, 530c, 550c, 570c, 600p, 640pc, 650c, 660c, 680c, 690c, 700is, 710s, 720s, 740ips, 750ips, 760ips, 770ips, 780ips, 790ips, 800c, 810c, 820c, 830c, 890c, 910s.
PITTSBURGH:	
Carnegie Institute of Technology----- Chemical engineering laboratories, J. H. James. Hydraulic laboratory, F. M. McCullough. Materials testing laboratory, F. M. McCullough. Electrical engineering laboratory, W. R. Work. Mechanical engineering laboratory, W. Trinks. Mining and metallurgical engineering laboratory, J. Aston. Physics laboratories, H. S. Hower.	010c, 020c, 030c, 040c, 050c, 060c, 070c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 240c, 250c, 260c, 280c, 290c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 400cp, 410cp, 420c, 470c, 480c, 490c, 500achp, 510achp, 520achp, 530achp, 540achp, 550achp, 570achp, 590achp, 600acmp, 610acmp, 620acmp, 630acmp, 640acmp, 650acmp, 680acmp, 690acmp, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 910sp, 970c.
University of Pittsburgh----- Chemical laboratory, H. C. Bashoum. Civil engineering laboratory, J. Hammond Smith. Mechanical laboratory, John Weber. Mining laboratory, R. M. Black. Physics laboratory, A. G. Worthing. Metallurgical laboratory, S. L. Goodale.	410cp, 420p, 470p, 500chp, 510p, 530ph, 600p, 610p, 700s, 710s, 720s, 750s, 800c, 820c, 830c, 910s, 950p.
STATE COLLEGE:	
Pennsylvania State College----- Agriculture laboratory, R. L. Watts. Chemical and physical laboratory, Gerald L. Wendt. Engineering laboratory, R. L. Sackett. Mining and metallurgy laboratory, E. A. Holbrook.	000b, 010bc, 020bc, 040bc, 050bc, 100bc; 110bc, 120bc, 130bc, 140bc, 150bc, 160bc, 170bc, 200c, 210c, 220c, 230c, 240c, 250c, 260c, 280c, 290c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 400p, 410p, 420p, 500hl, 510cp, 520cp, 530cph, 540i, 550i, 560i, 570cp, 590cp, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 780s, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c, 910s, 920s, 930s, 970s.
SWARTHMORE:	
Swarthmore College----- Civil engineering laboratory, Weston E. Fuller. Electrical engineering laboratory, Lewis Fussell. Mechanical engineering laboratory, Charles G. Thatcher.	410p, 510p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p, 700s, 710s, 820c, 830c.
VILLANOVA:	
Villanova College----- Anatomical and biological laboratory, J. A. Dougherty. Chemical and physiological laboratory, Eli Duncombe. Organic chemistry laboratory, Robert Fitzgerald. General physics laboratory, J. J. Crawford. Magnetic and electric laboratory, C. A. McGeehan. Mechanical laboratory, J. Stanley Morehouse.	040c, 140c, 150c, 160c, 200c, 210c, 220c, 230c, 280c, 290c, 500c, 510p, 570c, 600cp, 610cp, 630c, 640cp, 650c, 700p, 710p, 760p, 800c, 810c, 820c, 830c, 840c, 870c.

PHILIPPINE ISLANDS

MANILA:	
University of the Philippines----- Chemistry experiment station laboratory, F. O. Santos. Sugar laboratory, M. L. Roxson.	010c, 020c, 030c, 090c, 110c, 120c, 130c, 150c, 160c, 240c, 290c, 850c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

PORTO RICO

Location and name of laboratory	Commodities and nature of tests ¹
RIO PIEDRAS: University of Porto Rico----- Sugar chemistry laboratory. Engineering laboratory. Chemistry of foods laboratory. Biology laboratory.	010bc, 020cb, 030bc, 040bc, 120bc, 130bc, 140bc, 150bc, 160c, 290bc, 410p, 500c, 510p, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 850c.

RHODE ISLAND

KINGSTON: Rhode Island State College----- Mechanical laboratory, R. L. Wales. Civil engineering laboratory, S. H. Webster. Electrical and physics laboratory, William Anderson. Chemical laboratory, J. W. Ince.	410p, 500chl, 510p, 600p, 610p, 700s, 710s, 820c, 830c.
PROVIDENCE: Brown University----- Astronomy laboratory, Clinton H. Currier. Biology laboratory, Frederick P. Gorham. Botany laboratory, Walter H. Snell. Chemistry laboratory, Charles A. Kraus. Engineering laboratory, William H. Kenerson. Physics laboratory, Albert De F. Palmer. Geology laboratory, Charles W. Brown.	

SOUTH CAROLINA

CLEMSON COLLEGE: The Clemson Agricultural College----- Botany and bacteriology laboratory, W. B. Aull. Geology and mineralogy laboratory, F. H. H. Calhoun. Chemical laboratory, R. N. Brackett. Electrical laboratory, F. T. Dorgan. Mechanical laboratory, S. B. Earle. Civil engineering laboratory, E. L. Clarke. Engineering experiment station laboratory, S. B. Earle. Research laboratory, H. W. Barne.	020cb, 110c, 170c, 260c, 280c, 410p, 500c, 510p, 520c, 530i, 540i, 550i, 560i, 570i, 590i, 600cp, 610cp, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c.
COLUMBIA: University of South Carolina----- Electrical engineering laboratory, T. F. Ball. Geology laboratory, Stephen Taber. Biological laboratory, A. C. Moore. Pharmacy laboratory, E. T. Motley. Chemical laboratory, G. F. Lipscomb. Strength of materials laboratory, W. E. Rowe. Physics laboratory, A. C. Carson.	000b, 020c, 030b, 040cp, 050b, 070b, 110c, 120b, 130b, 140c, 150c, 160c, 170cp, 240b, 260c, 290b, 400b, 410pb, 430p, 510cp, 530c, 540c, 550c, 570c, 590c, 710s, 800cp, 820cp, 970cp.
GREENVILLE: Furman University----- Chemical laboratory, C. F. Inman. Biological laboratory, S. A. Ives. Physical laboratory, J. L. Rose.	040ac, 140ac, 160ac, 240ac, 390acp, 710p.
SPARTANBURG: Wofford College----- Physics laboratory, C. S. Pettis. Electrical laboratory, E. H. Shuler. Mineralogy laboratory, D. A. DuPre. Biological laboratory, C. B. Waller. Chemical laboratory, C. B. Waller.	710s (motors, generators, small), 850c, 880c.

SOUTH DAKOTA

BROOKINGS: South Dakota State College----- Fuel and steam laboratory, H. H. Hoy. Cement concrete testing laboratory, H. S. Carter. Electrical machinery laboratory, H. M. Crothers. Drug assay laboratory, E. K. Sules. Textile laboratory, A. Holgrin. Chemical laboratory, B. A. Dunbar. Botanical laboratory, A. T. Evans.	000p, 010cb, 020cb, 040c, 100cs, 110p, 120c, 130c, 140c, 160c, 170c, 200c, 210cp, 240cs, 250b, 300c, 320cp, 330c, 340c, 360cp, 370c, 410p, 500h, 510cp, 530cp, 600p, 610p, 710s, 730s, 810c, 820c, 830c, 850c, 860c, 880c, 890c.
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¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

SOUTH DAKOTA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
RAPID CITY:	
South Dakota State School of Mines-----	410p, 500eph, 510ep, 530c, 600cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 700s, 710s, 820c, 830c, 880c, 910s.
Electrical laboratory, J. O. Kammerman.	
Mining laboratory, F. C. Lincoln.	
Civil engineering laboratory, J. C. Rathbun.	
Physics laboratory, C. G. Watson.	
Metallurgical laboratory, Bancroft Gore.	
Chemical laboratory, Andrew Karsten.	
Mining experiment station laboratory, Charles Bentley.	
VERMILION:	
University of South Dakota-----	000b, 010b, 020b, 030b, 040c, 050b, 060p, 090cb, 100c, 110c, 120b, 140c, 150c, 160cb, 170cb, 220c, 230c, 300ps, 330ps (rope), 360ps, 370ps, 390ps, 400p, 410p, 420p, 430p, 500chl, 510cp, 520c, 530c, 540c, 550c, 570c, 590c, 600pc, 610p, 620c, 630c, 640c, 650c, 680c, 690c, 700s, 710s, 720s, 770s, 800c, 810c, 820c, 830c, 850c, 870c, 880cb, 890c, 910s, 980p.
State health laboratory, J. C. Ohlmacher.	
Department of chemistry laboratory, Arthur M. Pardee.	
State geological survey laboratory, E. P. Rothrock.	
Physical and mechanical testing laboratory, M. W. Davidson.	
Home economics laboratory, Mary Edna Courtney.	
Pharmodynamics laboratory, H. Bourquin.	
Road and building materials laboratory, J. M. Brown.	
Physics laboratory, L. E. Akeley.	
Electrical engineering laboratory, B. B. Brackett.	

TENNESSEE

KNOXVILLE:	
University of Tennessee-----	410p, 500hl, 510cp, 600p, 610p, 700s, 710s.
Engineering experiment station laboratory, C. E. Ferris.	
Hydraulic laboratory, J. A. Switzer.	
Mechanical laboratory, W. R. Woolrich.	
Electrical laboratory, C. A. Perkins.	
Civil engineering laboratory, W. W. Carson.	
Chemistry laboratory.	
Physics laboratory.	
MARYVILLE:	
Maryville College-----	170ac.
Chemistry laboratory, George D. Howell.	
Physics laboratory, George A. Knapp.	
Biology laboratory, Susan A. Green.	
NASHVILLE:	
Vanderbilt University-----	170c, 410p, 500chl, 510cp, 530cp, 570c, 600cm, 610cm, 620c, 630cm, 640cm, 650cm, 680cm, 690cm, 710s, 840cs, 850c, 870c, 910s.
Industrial laboratory, J. M. Breckenridge.	
Physical laboratory, T. J. Buchei.	
Organic laboratory, A. W. Ingersoll.	
Analytical laboratory, F. S. Conover.	
Metallurgy laboratory, W. P. Fishel.	

TEXAS

AUSTIN:		
University of Texas-----	500hl, 510cp, 530cp, 700s, 710s, 820c, 830c, 880cb, 910s.	
Industrial chemistry experiment station, E. P. Schoch.		
Engineering experiment station, F. E. Giesecke.		
BELTON:		
Baylor College-----	200c, 210c, 300c, 310c, 360c, 370c, 500c, 510c, 520c, 530c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 910s.	
Chemistry laboratory, A. T. Bawden.		
BROWNWOOD:		
Howard Payne College-----		500cp, 510cp, 530cp, 540cp, 550cp, 570cp, 590cp, 600cm, 620cm, 630cm, 640cm, 650cm, 680cm, 690cm, 800cbpa, 810cbpa, 820cbpa, 830cbpa, 850cbpa, 870cbpa, 880cbpa, 890cbpa.
Chemical laboratory, O. E. Winebrenner.		
COLLEGE STATION:		
Agricultural and Mechanical College of Texas-----	100c, 110c, 120c, 130c, 140c, 360c, 410p, 500chl, 510p, 530ph, 600p, 610p, 700s, 710s, 720s, 730s, 850c.	
State chemist and division of chemistry experiment station, G. S. Frops.		
Department of chemistry laboratory, C. C. Hedges.		
Civil engineering department laboratory, J. J. Richey.		
Wool laboratory, J. M. Jones.		
Department of agricultural engineering laboratory, D. Scoates.		

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

TEXAS—Continued

Location and name of laboratory	Commodities and nature of tests ¹
GEORGETOWN: Southwestern University----- Chemical laboratory, J. C. Godbey. Biology laboratory, J. B. Moorman. Geology laboratory, R. W. Tinsley. Physics laboratory, R. V. Guthrie.	510c, 530c, 570c, 630c, 650c, 680c.
HOUSTON: The Rice Institute----- Chemistry laboratory, H. B. Weiser. Industrial chemistry laboratory, A. J. Hartsook. Physics laboratory, H. A. Wilson. Biology laboratory, Edgar Altenburg. Mechanical laboratory, J. H. Pound. Electrical engineering laboratory, H. K. Humphrey. Civil engineering laboratory, L. B. Ryon.	020cp, 140cp, 160cp, 170cp, 410p, 500chl, 510cp, 530cps, 540c, 570c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 710s, 750ps, 760ps, 780s, 790ps, 820c, 830c, 840c, 850c, 870c, 880cb, 890c, 910s.
LUBBUCK: Texas Technological College----- Chemistry, W. L. Ray, W. M. Craig, and W. T. Read. Biological, R. A. Studhalter, M. F. Landwer. Textiles, Mabel D. Erwin. Physical, E. F. George, C. S. Mast, W. H. Abbitt, Harry Hill, and C. C. Schmidt. Petrology, L. T. Patton. Mineralogy, Wm. A. P. Graham. Paleontology, Merrill Stainbrook. Agricultural, K. M. Renner, A. H. Leidigh, C. H. Mahoney, and W. L. Stengel. Engineering, Wm. J. Miller, E. W. Camp, G. L. Tuve, J. H. Murdough.	000ai, 010ai, 020bai, 040cp, 050ai, 060pai, 090ai, 100aib, 110aib, 120pai, 140acph, 150pa, 160pa, 170pa, 200px, 210p, 240ai, 250ai, 300pac, 310p, 330pcai, 340ai, 360apc, 370apc, 390apc (rayon), 400p, 500chp, 510ca, 520cpa, 530cp, 540a, 550pa, 570ca, 590ca, 600cpa, 610x, 620cp, 630cp, 640cp, 650cp, 660c, 680c, 690cpx, 700pi, 710pi, 730i, 740p, 750p, 760pi, 780i, 790i, 800c, 820c, 850cai, 870c, 880c.
WACO: Baylor University----- Chemical laboratory, W. T. Gooch. Botanical laboratory, Edward N. Jones. Physiology laboratory, G. E. Potter. Bacteriology laboratory, W. F. Lange.	000t, 010t, 020t, 120b, 130b, 140cp, 150a (condiments), 300a, 310a, 400ab, 430a, 500cp, 510cp, 530cp, 810ca (pharmaceutical), 880cb (water treatments).
WAXAHACHIE: Trinity University----- Chemical laboratory, J. B. Ford. Physical laboratory, Fred W. Tracy. Biological laboratory, C. D. Day. Home economics laboratory, F. C. Smith.	020c, 100c, 140c, 150c, 170c, 500c, 510c, 530c, 570c, 620c, 640c.
UTAH	
SALT LAKE CITY: University of Utah----- Mechanical engineering laboratory, E. H. Beckstrand. Chemistry laboratory, W. D. Bonner. Mining laboratory, R. S. Lewis. Physics and electrical laboratories, J. F. Merrill. Nutrition laboratory, Rose H. Widsøe. Bacteriology and pathology laboratory, L. L. Daines. Geology and mineralogy laboratory, F. J. Pack. Metallurgy laboratory, R. H. Bradford. Mining and metallurgical research laboratory, A. M. Gaudin.	010c, 020c, 030c, 040cp, 100c, 110cp, 120c, 130c, 140cp, 150c, 160cp, 170cp, 280c, 300c, 370c, 410ps, 500acp, 510acp, 530a, 540a, 550a, 560a, 570a, 590a, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660pm, 680cpm, 690cpm, 700ps, 710s, 750s, 800c, 820c, 830c, 840c, 850c, 870c, 890c, 910s.
VERMONT	
BURLINGTON: University of Vermont----- Chemical laboratories, G. H. Brewer. Mineralogical and geological laboratories, E. C. Jacobs. Dairy products testing laboratory, J. L. Hills. Agricultural experiment station laboratory, J. L. Hills. Mechanical engineering laboratory, V. R. Yates. Materials testing laboratory, L. B. Puffer. State laboratory of hygiene, C. F. Dalton. Zoology laboratory, H. F. Perkins. Botany laboratory, G. P. Burns.	000b, 010cb, 020cb, 100c, 110c, 140c, 240c, 400p, 410p, 500ch, 510p, 560i, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 700ps, 710ps, 720ps, 730ps, 740ps, 750ps, 760ps, 770ps, 780ps, 790ps, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

VERMONT—Continued

Location and name of laboratory	Commodities and nature of tests ¹
MIDDLEBURY:	
Middlebury College-----	020bcpa, 090c, 160ct, 170ct, 220c, 230c,
Chemical laboratory, P. Conant Voter.	300cb, 360cb, 470ca, 500c, 510c, 520c,
Biological laboratory, Raymond L. Barney.	530c, 540c, 550c, 560c, 570c, 590c,
Physical laboratory, Ernest C. Bryant.	600cm, 610cm, 620cm, 630cm, 640cm,
Geological and mineralogical laboratory, Phelps N. Swett.	650cm, 660cm, 680cm, 690cm, 800c,
	810c, 820c, 830c, 840c, 850c, 860c,
	870c, 880c, 890c.
NORTHFIELD:	
Norwich University-----	410p, 510p, 600cp, 610cp, 700s, 710s.
Electrical laboratory, F. A. Spencer.	
Civil engineering laboratory, A. E. Winslow.	
Mechanical laboratory, W. D. Emerson.	
Chemical laboratory.	
WINOOSKI:	
Saint Michael's College-----	010c, 040c, 140c, 150c, 160c, 280c,
Chemical laboratory, F. S. Quinlan.	500pc, 570c, 590pc, 630c, 640c, 650c,
Physical laboratory, E. Alliot.	680c, 690c, 800c, 820c, 830c, 840c,
	850c, 860c, 870c, 880c, 890c, 970pc.

VIRGINIA

BLACKSBURG:	
Virginia Polytechnic Institute-----	020c, 040c, 050p, 100c, 110c, 120c, 130c,
Agricultural experiment station, A. W. Drinkard.	140c, 150c, 160c, 170c, 400p, 410s,
Engineering experiment station, J. S. A. Johnson.	510pc, 600p, 700s, 710s, 720s, 730s,
	910s.
CHARLOTTESVILLE:	
University of Virginia-----	400p, 500p, 510pc, 600pc, 610pc, 620pc,
Experimental engineering laboratory, Charles Henderson.	630pc, 640pc, 650pc, 680pc, 690pc.
Analytical chemistry laboratory, John H. Yoe.	
LEXINGTON:	
Virginia Military Institute-----	410p, 500p, 510p, 600p, 610p.
Chemical laboratory, Hunter Pendleton.	
Physics laboratory, Francis Mallory.	
Electrical laboratory, S. W. Anderson.	
Biological laboratory, J. M. Player.	
Mineralogical laboratory, Edward Steidtmann.	
Washington and Lee University-----	500ch, 510p, 600cp, 610cp, 660c, 700s,
Electrical laboratory, R. W. Dickey.	710s.
Civil engineering laboratory, W. T. Lyle.	
Chemical laboratory, J. L. Howe.	
Geological laboratory, H. D. Campbell.	
Physical laboratory, B. A. Wooten.	
Biological laboratory, W. D. Hoyt.	
WILLIAMSBURG:	
College of William and Mary-----	160c, 500chp, 550p, 600c, 630p, 640c,
Physical laboratory, R. C. Young.	680c, 690c, 700ps, 710ps, 820c, 830c,
Chemical laboratory, R. G. Robb.	850c, 880bc, 890c.
Biological laboratory, D. W. Davis.	

WASHINGTON

PULLMAN:	
State College of Washington-----	010c, 020c, 040c, 100c, 110c, 120c, 130c,
Chemistry laboratory, C. C. Todd.	140c, 150c, 160c, 170c, 200s (tires),
Botany laboratory, F. L. Pickett.	220c, 240c, 410p, 500cp, 510p, 530cp,
Engineering experiment station laboratory, H. V. Carpenter.	550s, 570c, 600p, 610p, 630p, 640p,
Pharmacy laboratory, P. H. Dirstine.	690p, 700s, 710s, 720s, 800c, 810c,
Experimental station laboratory, J. L. St. John.	820c, 830c, 840c, 850c, 860c, 870c,
	880c, 890c.
SEATTLE:	
University of Washington-----	020c, 030cb, 040cp, 060c, 090pc, 100cb,
Chemistry and chemical engineering laboratory, H. K. Benson.	110cb, 120cb, 130cb, 140c, 150c, 160c,
Fisheries laboratory, John Cobb.	170c, 200c, 210cs, 220c, 230cp, 250i,
Forestry laboratory, Hugo Winkenwerder.	260c, 280cs, 290cb, 300c, 310c, 360c,
Physics laboratory, F. A. Osborn.	370c, 400i, 410ps, 420p, 430p, 470psc,
Mining, metallurgical, and ceramics laboratory, M. Roberts.	500chl, 510pc, 520pc, 530pc, 540p,
Electrical, mechanical, and civil engineering laboratories, C. E. Magnusson.	570c, 590cps, 600cpm, 610cpm,
	620cpm, 630cpm, 640cpm, 650cpm,
	660cpm, 680cpm, 690cpm, 700s, 710s,
	720s, 750s, 790s, 800c, 810c, 820c,
	830c, 840s, 850c, 860c, 870c, 880cb,
	890c, 910sp.

¹ See pp. 1 and 2.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

WEST VIRGINIA

Location and name of laboratory	Commodities and nature of tests ¹
MORGANTOWN: West Virginia University----- Agricultural chemistry laboratory, R. B. Dustman. Feeds and fertilizer laboratory, T. B. Leith. Seeds laboratory, H. K. Rowley. Engineering chemistry laboratory, William Hodges. Department of chemistry laboratory, Friend E. Clark. Experimental engineering laboratory, J. B. Grumbein. Mechanical laboratory, C. R. Jones. Electrical laboratory, A. H. Forman. Plant pathology laboratory, N. J. Giddings. Entomology laboratory, L. M. Peairs. Dairy laboratory, E. L. Anthony.	020p, 100p, 110c, 130c, 240p, 250i, 410p, 500c, 510cp, 520c, 530c, 570c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 720s, 750s, 800cp, 810cp, 820c, 830cp, 840cp, 850cp, 870cp, 880cp.

WISCONSIN

APPLETON: Lawrence College----- Chemical laboratory, L. A. Youtz. Physics laboratory, Archie D. Power. Zoology laboratory, R. C. Mullenix. Botany laboratory, W. E. Rogers. Geology and mineralogy laboratory, R. M. Bagg.	470cp, 490cp, 570c (sulphur), 630c (antimony), 640c (copper alloys), 680c (tin and zinc alloys).
MADISON: University of Wisconsin----- Chemical engineering laboratory, O. L. Kowalke. Mining and metallurgy laboratory, R. S. McCaffery. Materials testing laboratory, M. O. Withey. Electrical engineering laboratory, E. Bennett. Mechanical engineering laboratory, G. L. Larson. Hydraulic laboratory, C. I. Corp. Veterinary science laboratory, F. B. Hadley. Dairy science laboratory, E. H. Farrington. Feeds and fertilizer laboratory, Walter Griem. Seed-testing laboratory, A. L. Stone. Drainage laboratory, E. R. Jones. Textile laboratory, Miss E. Millstrom. Forest products laboratory, C. P. Winslow. Soils laboratory, C. J. Chapman.	000p, 020cp, 050a, 110c, 240cs, 290p, 300a, 330a, 360a, 390cp, 400p, 410p, 470a, 500c, 510p, 530p, 570p, 590cp, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 710s, 720s, 750s, 780s, 790s, 820c, 830c, 880c, 890c, 910s.
MILWAUKEE: Marquette University----- Structural materials laboratory, Theo. H. Trams. Bio chemistry laboratory, J. C. Bock. Pathology and bacteriology laboratory, E. L. Miloslavick. Pharmacology laboratory, H. T. Beckman. Anatomy laboratory, E. J. Carey.	000pc, 010pc, 020pc, 030pc, 040pc, 140c, 160c, 170c, 230c, 410p, 510pc, 530pc, 600pc, 610pc, 640pc, 800pc, 810pc, 820pc, 830pc, 850pc, 870pc, 880pc, 890pc.

WYOMING

LARAMIE: University of Wyoming----- Wool and textile laboratory, J. A. Hill. Chemistry laboratory, O. A. Bently. Bacteriological and pathological laboratory, C. Elder. Seeds laboratory, A. F. Voss. Engineering laboratory, E. D. Hay.	000b, 010c, 020cb, 030c, 040c, 090c, 100c, 200c, 240b, 300cp, 410p, 510p, 530p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p, 800c.
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¹ See pp. 1 and 2.

FACILITATING THE USE OF SPECIFICATIONS

An analysis of the status of the making and the utilization of specifications reveals the fact that many excellent specifications well recognized throughout industry are not being widely used at the present time because of the inability on the part of most purchasers to determine whether or not commodities delivered correspond to the specification requirements. A great impetus to the popularizing of the use of specifications can be given by eliminating this disadvantage to the small-quantity purchaser.

As a solution to the problem of eliminating the above-mentioned disadvantage and thereby facilitating the use of specifications, use is being made of the so-called certification plan.

CERTIFICATION PLAN

In carrying out this plan there are compiled lists of manufacturers who have expressed their desire to supply material in accordance with certain selected specifications and willing to certify to the purchaser upon request that the material thus supplied is guaranteed to comply with the requirements and tests of the specifications.

From time to time the State and other public purchasing agents have sought the assistance of the United States Department of Commerce in the formulation of standards, specifications, and methods of tests for their purchases. Every effort is therefore being exerted to make the certification plan as effective as possible for "public purchasers," that is, purchasers for the Federal, State, and municipal governments who are spending the money collected from the public in the form of taxes.

There have already been compiled by the National Bureau of Standards 75 lists of such firms as have expressed to the bureau (up to October 1, 1927) their desire to have their name placed on the lists of manufacturers willing, when requested to do so, to certify to purchasers that material supplied in accordance with the designated 75 United States Government master specifications complies with the requirements and tests of these specifications and is so guaranteed by them. Copies of any of these lists of manufacturers, to which additions are being made from time to time, can be obtained upon request. The specifications referred to are as follows:

Specifi- cation No.	Commodities covered	Specifi- cation No.	Commodities covered
23.	Large tungsten filament incandescent electric lamps.	85.	Asphalt for waterproofing and damp proofing.
36a.	Fire-extinguishing liquid (carbon tetrachloride base).	86.	Asphalt saturated rag felt for roofing and waterproofing.
37.	Leather belting (vegetable tanned).	87.	Asphalt primer for roofing and waterproofing.
52a.	Wood screws.	88.	Asphalt for unsurfaced built-up roofing.
55.	Cut-out bases.	123.	Flat glass for glazing purposes.
57.	Flexible nonmetallic tubing.	124.	Hand chemical fire extinguishers (1 quart carbon tetrachloride type).
58.	Dry cells.	175.	Knife switches.
62.	Snap switches.	183.	Upholstery leather.
65.	Rubber-covered wires and cables for ordinary purposes.	184.	Lace leather (vegetable tanned).
80.	Coal-tar pitch for roofing.	191.	Brush, blacking and dauber.
81.	Coal-tar saturated rag felt for roofing and waterproofing.	192.	Brush, casting.
82.	Surfacing materials for bituminous built-up roofing.	193.	Brush, clothes scrubbing.
83.	Coal-tar pitch for waterproofing and damp proofing.	194.	Brush, cuspidor.
84.	Asphalt for mineral surfaced roofing.	195a.	Brush, dauber, long paddle.
		196.	Brush, deck scrubbing.
		197.	Brush, hand-floor scrubbing.
		198.	Brush, hair, military.
		199.	Brush, radiator dusting.

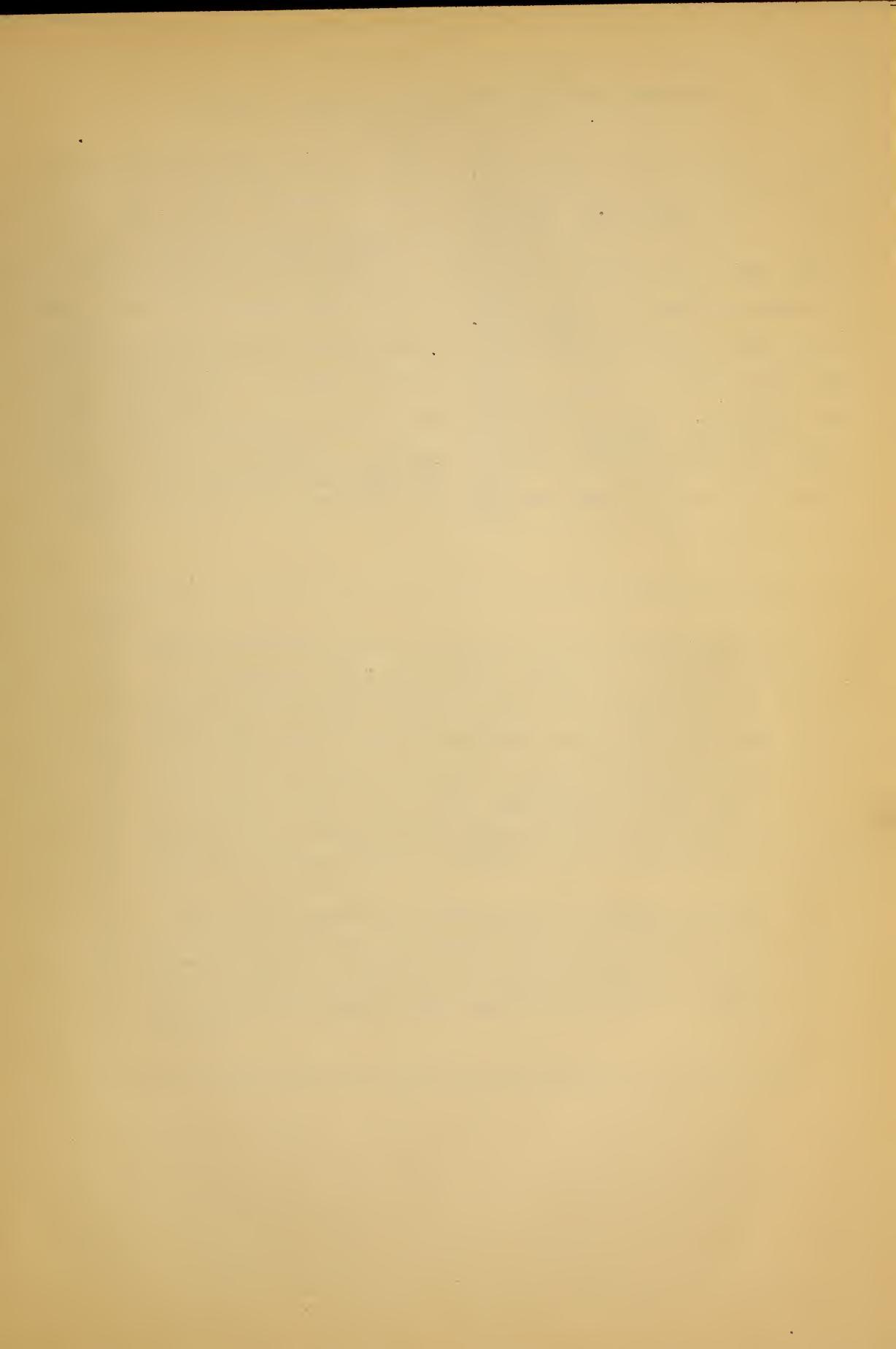
Specification No.	Commodities covered	Specification No.	Commodities covered
200.	Brush, shaving.	294.	Asphalt-saturated woven cotton fabric for waterproofing.
201.	Brush, sidewalk.	295.	Asphalt-saturated rag felt for flashings.
202.	Brush, tooth.	296.	Slate-surfaced, asphalt-prepared roofing and shingles.
203.	Brush, window.	297.	Wire rope.
204.	Broom, rattan push.	311.	Rigid conduit, enameled.
205.	Broom, rattan (upright).	312.	Rubber gloves for electrical workers (for use in connection with apparatus or circuits not exceeding 3,000 volts to ground).
206.	Broom, scrubbing.	314.	Railroad-track scales.
207.	Broom, wire push.	332.	Broom, whisk.
208a.	Duster, counter.	333a.	Broom, corn.
213.	Hand chemical fire extinguisher (soda-and-acid type).	336.	Builders' hardware.
214.	Asphalt prepared roofing.	342a.	Pipe, brass, seamless, iron-pipe size, standard and extra strong.
241.	Sole leather (vegetable tanned).	343.	Cast-iron soil pipe and fittings, coated and uncoated.
242.	Wrought-iron pipe (welded), black and galvanized.	347.	Lapwelded and seamless steel boiler tubes.
275.	Road oil for hot application (type OH-1-25).	349.	Lapwelded charcoal iron boiler tubes.
276a.	Asphalt for use in road and pavement construction.	362.	Liquid-measuring devices, retail type.
277.	Petroleum asphalt for joint filler (squeegee or pouring method) (type PAF-1-25).	363.	Burglar-resisting safes.
279.	Tars for cold application.	380.	Cement, asphalt plastic.
280.	Refined tar for hot application (type TH-1-25).	411.	Tableware, silver plated.
281.	Tar for use in repair work.	423.	Roofing, prepared, asphalt and asbestos, slate-surfaced.
282.	Refined tar for construction.	424.	Roof coating, asphalt, fibrous.
287.	Tubing, copper, seamless, and pipe, copper, seamless, standard iron-pipe size.		
291.	Friction tape.		
292.	Rubber insulating tape.		

Organized for the purpose of securing economy in the procurement of material used by the Government, the Federal Specifications Board makes a strenuous effort to adopt such specifications as will cover commercial materials and supplies. Before the specifications are promulgated as official United States Government master specifications for the mandatory use of the departments and establishments of the Government, comments and criticisms from the manufacturers and interested engineering and technical societies are given careful consideration. A list of the specifications thus far adopted by the board is given in Bureau of Standards Circular No. 319, which can be obtained, upon request, from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Among the duties assigned to the board are not only the compilation and adoption of standard specifications for materials and services, but also the bringing of the Government specifications into harmony with the best commercial practice whenever conditions permit, bearing in mind the broadening of the field of supply.

Encouraging the maximum possible number of purchasing agents to make use of the specifications of the Federal Specifications Board would broaden the field of supply by inducing the maximum possible number of persons to manufacture commodities meeting the requirements of the Federal Government. Moreover, the widespread use of specifications of the Federal Specifications Board would serve to draw attention to such modifications as might well be made therein in order to render them satisfactory to the buying public and to bring them into harmony with the best commercial practice.

Reference is made herein specifically to United States Government master specifications as the lists referred to are those of manufacturers willing to certify to compliance with these specifications. However, the plan outlined could readily be, and is being, applied to other groups of nationally recognized specifications. It is to be expected that the application of the plan will be of benefit not only in the general promotion of the use of specifications by both the small and the large consumers, but also in the unification of specifications having national recognition.





BUREAU OF STANDARDS PAMPHLETS ON TESTING

(Continued from p. 2 of cover)

- Radio receiving sets, some methods of testing, T256. Price, 10 cents.
- Rods, straight, in intense fields, magnetic testing of, S361. Price, 5 cents.
- Rope, wire hoisting, nondestructive testing of, by magnetic analysis, T315. Price, 10 cents.
- Rubber goods, testing of, C38. Price, 20 cents.
- Scale, calibration of a divided, C329. Price, 10 cents.
- Scales, large capacity, method for precision tests of, T199. Price, 5 cents.
- Soaps, specifications for and methods of testing, C62. Price, 5 cents.
- Sugars, influence of atmospheric conditions in the testing of, S221. Price, 10 cents.
- Supplies, miscellaneous, including paints and paint materials, inks, lubricating oils, soaps, etc., some technical methods of testing, M15. Price, 15 cents.
- Tanning materials, synthetic, analysis of, T316. Price, 10 cents.
- Tapes, measuring, testing of, at the Bureau of Standards, C328. Price, 10 cents.
- Thermometers, clinical, testing of, S13. Price, 15 cents.
- Tiles, hollow building, tests of, T120. Price, 5 cents.
- Timepieces, tests of, and measurement of time, C51. Price, 15 cents.
- Transformer steel, the testing of, S109. Price, 5 cents.
- Transformers, current, a method for testing, S309. Price, 5 cents.
- Transformers, instrument, a watt-hour meter method of testing, S233. Price, 5 cents.
- Transformers, potential, testing, S217. Price, 5 cents.
- Tubing, gas, tests of flexible, T133. Price, 10 cents.

THIS VOLUME represents an attempt on the part of the Department of Commerce to collect and publish a directory of the commercial testing and college research laboratories in the United States of America. Laboratories of consulting chemists, engineers, and metallurgists, and research laboratories of manufacturing companies and other industrial research laboratories, have been listed only in case definite information has been supplied that they are engaged in commodity acceptance testing on a commercial basis. A list of about 1,000 industrial research laboratories, including consulting research laboratories, has been compiled by the National Research Council, Washington, D. C., and published in Bulletin No. 60, July, 1927.

Criticisms and suggestions are desired from all interested persons, so that the lists of commercial testing and college research laboratories and the services they are equipped to render may be kept as nearly complete, accurate, and up to date as possible. All recommendations for improvement received will be given careful consideration when future editions are issued.

A DIRECTORY OF SPECIFICATIONS

Considerable economy can be realized in the purchase of commodities by the use of specifications. Real competitive bidding can be invited, and the delivery of satisfactory material can be insisted upon. To an ever-increasing extent State and city governments, public utilities, and the better organized industries of the country are adopting the use of specifications, which has been a feature of Federal Government purchasing for many years.

Information regarding the best known specifications for more than 6,000 commodities is given in convenient form in the National Directory of Commodity Specifications, which has been issued by the Bureau of Standards with the cooperation of the Bureau of Foreign and Domestic Commerce of the Department of Commerce. The book tells not only what specifications are in general use, but also by whom they were prepared and where copies can be obtained. In it are conveniently indexed for ready finding about 27,000 specifications prepared by the Federal Specifications Board and the separate departments of the Federal Government, by State and city purchasing agents, public utilities, technical societies, and trade associations. At the request of Secretary Hoover an advisory board was selected by these interests to represent them in supervising the preparation of the Directory.

The contents include: A statement and indorsement by the advisory board, a foreword by Secretary Hoover, a thoroughly classified list of specifications for all types of commodities. There are also included on alphabetical list of commodities, which serves as an index to the specifications, and directions for obtaining copies of specifications listed in the Directory.

Summary of commodities and specifications therefor

Decimal class	Commodity groups	Commodities indexed	Approximate number of specifications
000	Animal and animal products.....	350	1, 600
100	Vegetable food products, oil, seeds, expressed oil, and beverages.....	525	2, 100
200	Other vegetable products (except fibers and wood).....	400	800
300	Textiles.....	275	1, 900
400	Wood and paper.....	625	3, 300
500	Nonmetallic minerals.....	725	3, 300
600	Ores, metals, and manufactures (except machinery and vehicles).....	1, 700	6, 400
700	Machinery and vehicles.....	800	2, 900
800	Chemicals and allied products.....	600	2, 400
900	Miscellaneous.....	650	2, 400
	Total.....	6, 650	27, 100

Whether you are a producer or a consumer, a seller or a buyer of commodities; whether you are interested in the preparation or in the use of specifications, the Directory contains for you information which you can not afford to do without. It is printed in small, but legible type, and thus the number of pages has been kept at the minimum, 385, without sacrificing the usefulness of the Directory. It is bound in cloth.

The cost of printing and binding the book at the Government Printing Office is \$1.25.

DIRECTIONS FOR OBTAINING THE DIRECTORY OF SPECIFICATIONS

Copies of the National Directory of Commodity Specifications may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by sending with the order a remittance either in the form of post-office money order, coupons (issued for the specific purpose of purchasing Government publications), express money order, New York draft, or cash—at the sender's own risk. It is important to follow these directions explicitly to avoid delay and confusion. If the Directory is to be shipped to a foreign country (other than Mexico and Canada), add one-third to the price, making the total \$1.67.

DEPARTMENT OF COMMERCE

SUPPLEMENT

TO THE DIRECTORY OF

**COMMERCIAL TESTING AND
COLLEGE RESEARCH LABORATORIES**

To Accompany Miscellaneous Publication No. 90

[ISSUED JANUARY 4, 1929]



PRICE 5 CENTS

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Washington, D. C.

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON

1929

SUPPLEMENT

TO THE REPORT OF

COMMERICAL TESTING AND
COLLEGE RESEARCH LABORATORIES

OF THE UNIVERSITY OF TORONTO

1907-1908



PRINTED BY

UNIVERSITY OF TORONTO

1908

COMMERCIAL TESTING LABORATORIES

ALABAMA

Name and address of laboratories	Commodities and nature of tests
MOBILE: A. W. Williams Inspection Co., P. O. Box 314.	400api (wood and wood preservatives), 410api, 420api, 800cp.

DISTRICT OF COLUMBIA

WASHINGTON: John R. Lapham, 2033 G Street NW.	410p, 500p, 510p, 530p, 600p, 610p.
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FLORIDA

TAMPA: H. C. Nutting Co., Nebraska and Water Streets.	See Cincinnati.
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ILLINOIS

CHICAGO: Finishing Research Laboratories (Inc.), 1164 West Twenty-second Street.	060ahpis, 200ahpis, 210ahpis, 230ahpis, 300ahpis, 340ahpis, 390ahpis, 430ahpis, 470ahpis, 480ahpis, 490ahpis, 500ahpis, 540ahpis, 590ahpis, 600ahpis, 720ahpis, 740ahpis, 760ahpis, 770ahpis, 780ahpis, 790ahpis, 800ahpis, 830ahpis, 840ahpis, 890ahpis, 910ahpis, 930ahpis, 940ahpis, 950ahpis, 990ahpis.
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MISSOURI

KANSAS CITY: Standard Laboratories, 1334 Oak Street.	710espi, 910espi.
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NEW JERSEY

BURLINGTON: Conard & Buzby, 321 High Street.	400ip, 510ip, 600ip, 610ip, 620ip, 640ip, 690ip, 700ips, 750ips.
JERSEY CITY: Analytical Laboratory, 40 Journal Square.	010ab, 020abc, 030ab, 040ca, 090abc, 100ca, 110ca, 120ab, 130ac, 140acp, 160ac, 170cab, 500acp, 510acp, 570ac, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 810abct, 820act, 830c, 840ac, 850c, 870c, 880cb, 890c.
TRENTON: Rouse & Shearer (Inc.), 163 Bloomsbury Street.	500cph, 510cp, 520cp, 530cp, 540cp, 550cp, 560cp, 570cp, 590cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp.

NEW YORK

BUFFALO: Babcock Testing Laboratory, 32 East North Street. Williams Laboratory (Inc.), 11-15 East Swan Street.	090c (glue). 010c, 020c, 040cp, 090c, 100c, 110c, 140c, 150c, 160c, 170c, 220c, 390ac, 470ac, 490ac, 500cp, 510cp, 570c, 590c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
NEW YORK CITY: Certified Silk Service (Inc.), 425 Fourth Avenue. McLaughlin Laboratories (Inc.), 106 Sixth Avenue. Stillwell Laboratories (Inc.), The, 76½ Pine Street. Weiss & Downs (Inc.), 50 East Forty-first Street.	300aips, 360aips, 370aips, 390aips, 770aips. 020cb, 100c, 120c, 130c, 140c, 150c, 160c, 170c, 220c, 500c, 570c, 590c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880cb, 890c. 000c, 010c, 020c, 030c, 040c, 050c, 060c, 090c, 100c, 110c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 260c, 290c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c. 290acp, 390acp, 470acp, 490acp, 500acpi, 780cip, 790cip, 800abcip, 820acip, 830acip, 840acp, 850acip, 880abcip, 890acip, 990acip.

COMMERCIAL TESTING LABORATORIES—Continued

OHIO

Name and address of laboratories	Commodities and nature of tests
<p>CINCINNATI:</p> <p>F. C. Broeman & Co., NW. corner Third and Walnut Streets.</p> <p>H. C. Nutting Co., West Seventy-first Street, Carthage (branches at Cleveland, Habana, Cuba (Teniente Rey No. 33), and Tampa).</p> <p>CLEVELAND: H. C. Nutting Co., 8804 Superior Avenue, NE.</p>	<p>010c, 020c, 030c, 040c, 060c, 100c, 110c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 260c, 280c, 290c, 300c, 330c, 340c, 390c, 400c, 470c, 490c, 510c, 520c, 530c, 540c, 550c, 570c, 840c, 850c, 860c, 870c, 880c, 890c.</p> <p>100c, 170c, 320c, 400is, 410is, 470c, 500cp, 510cp, 530cp, 540cp, 570cp, 600cips, 610cips, 700si, 710si, 720si, 730si, 740si, 750si, 760si, 770si, 780si, 790si, 800cp, 820cp, 830cp, 840cp, 850cp, 870cp, 880c, 890c.</p> <p>See Cincinnati.</p>

OKLAHOMA

<p>OKLAHOMA CITY: Oklahoma Testing Laboratories, 519½ West Main Street.</p>	<p>040c, 140c, 400i, 500cp, 510cpi, 590c, 600c, 610cpi, 630c, 640c, 650c, 680c, 690c, 800cp, 820c, 830c, 840ci, 850c, 870c, 880c, 890c.</p>
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OREGON

<p>PORTLAND: Central Inspection Bureau, Bedell Building.</p>	<p>130acp, 140acp, 400ap, 410aip, 420ip, 600cpi, 630cpi, 640cpi, 700pi.</p>
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PENNSYLVANIA

<p>ASPINWALL (PITTSBURGH): National Cannery Laboratory, 111 Brilliant Avenue.</p>	<p>010abc, 020abc, 030abc, 040abc, 090abc, 100abc, 120abc, 130abc, 140abc, 150abc, 160abc, 170abc, 206b, 290abc, 570c, 950s.</p>
<p>PHILADELPHIA:</p> <p>Metallurgical Laboratories (Inc.), 1116 West Montgomery Avenue.</p> <p>Rubicon Co., 29 North Sixth Street.</p>	<p>600chimp, 610chimp, 630chimp, 640chimp, 690chimp.</p> <p>600ms, 610ms, 620ms, 640ms, 710ms, 910is.</p>
<p>PITTSBURGH: National Certification Laboratory, East End Trust Building.</p>	<p>010bc, 020bc, 030bc, 040bc, 100bc, 110bc, 120bc, 130bc, 140bc.</p>

TEXAS

<p>EL PASO: El Paso Testing Laboratories, 708 Mills Building.</p>	<p>010ci, 020ci, 040cai, 090cai, 140aci, 150aci, 170aci, 220ac, 280ac, 310i, 500acpi, 510acpi, 520acpi, 530acpi, 540acpi, 550acpi, 570acp, 590acpi, 600cp, 610cp, 620c, 630c, 640c, 650c, 660c, 680c, 690cpi, 740i, 750i, 760i, 780i, 790i, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.</p>
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WEST VIRGINIA

<p>HUNTINGTON: Tri-State Laboratories, The Union Bank Building.</p>	<p>020c, 040c, 090c, 100c, 110c, 160c, 170c, 210c, 220c, 280c, 290c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 970c.</p>
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COLLEGE RESEARCH LABORATORIES

CALIFORNIA

Location and name of laboratory	Commodities and nature of tests
MILLS COLLEGE: Mills College..... Chemical laboratory, V. L. Gibbons. Household science laboratory, Carrie C. Dozier.	010ac, 020abc, 030abc, 040abc, 100abc, 110abc, 130abc, 140abc, 150abc, 160abc, 170abc.
STOCKTON: College of the Pacific..... Chemical laboratory, J. H. Jonté.	500c, 600c, 620c, 630c, 640c, 650c, 690c, 800c, 890c.

CONNECTICUT

HARTFORD: Trinity College..... Biological laboratory, T. H. Bissonette, Horace Swan. Chemical laboratory, Vernon K. Kriebel. Physical laboratory, Henry A. Perkins.	020c, 040c, 100c, 110c, 140c, 150c, 160c, 170c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 820c, 830c, 850c, 890c.
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GEORGIA

ATHENS: Georgia State College of Agriculture..... Agricultural chemistry laboratories, L. M. Carter. Agricultural engineering laboratories, S. P. Lyle. Agronomy laboratories, John R. Fain. Animal husbandry laboratories, M. P. Jarnagin. Forestry laboratories, T. D. Burleigh. Home economics laboratories, Mary E. Creswell. Horticultural laboratories, T. H. McHatton. Poultry husbandry laboratories, J. H. Wood. Veterinary laboratories, A. G. G. Richardson.	000abc, 020abc, 100abc, 110abc, 120abc, 130abc, 240ab, 250ab, 260ab, 300a, 390a, 710aep, 730ap, 810ac, 850ac.
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ILLINOIS

CHICAGO: Loyola University School of Medicine..... Anatomical laboratory, T. T. Job, R. M. Strong. Bacteriological laboratory, E. Weiss. Chemical laboratory, William C. Austin. Pathological laboratory, F. A. McJunkin. Pharmacological laboratory, S. A. Matthews. Physiological laboratory, T. E. Boyd.	
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INDIANA

CRAWFORDSVILLE: Wabash College..... Botanical laboratory, A. R. Bechtel. Chemistry laboratory, L. B. Howell. Physical laboratory, G. W. Horton. Zoology laboratory, B. H. Graves.	020bc, 100bc, 110bc, 140pc, 170ct, 500pc, 520a, 600c, 620c, 630c, 640c, 650c, 680c, 690ca, 710p, 800cp, 820c, 880bct.
FRANKLIN: Franklin College..... Botany laboratory, E. Vestal. Chemistry laboratory, R. C. Roberts. Physies laboratory, J. E. Smith. Zoology laboratory, C. A. Deppe.	020c, 500c, 800c, 810c, 820c, 830c, 850c, 870c, 890c.

COLLEGE RESEARCH LABORATORIES—Continued

KANSAS

OTTAWA:

Ottawa University-----
 Bacteriology laboratory, W. B. Wilson.
 Chemical laboratory, W. R. Skidmore.

020b, 100c, 110c, 120c, 130c, 140c, 160c, 170c, 220c, 280ac,
 370c, 500c, 510cp, 520c, 540cp, 550p, 570c, 590cp,
 600cp, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c,
 800c, 820cp, 830c, 850c, 860c, 870c, 880c, 890c, 970c,
 990c.

MASSACHUSETTS

WELLESLEY:

Wellesley College-----
 Botany laboratory, Margaret C. Fer-
 guson.
 Chemistry laboratory, Helen S. French.
 Geology laboratory, Mary J. Lanier.
 Physics laboratory, Louise S. McDowell.
 Zoology laboratory, Marian E. Hubbard.

000cb, 010cb, 030cb, 040cb, 090cb, 100cbp, 110cbp,
 120cbp, 130cbp, 160cbp, 520e, 800cp, 810cb, 820cp,
 870cb, 880cb, 890cb.

NEW JERSEY

HOBOKEN:

Stevens Institute of Technology-----
 Chemical laboratory, F. J. Pond.
 Electrical laboratory, F. C. Stockwell.
 Mechanical laboratory, R. M. Anderson.
 Physics laboratory, Percy Hodge.

200c, 210c, 220c, 230c, 260c, 280c, 290c, 300a, 310a,
 320a, 330a, 340a, 360a, 370a, 390a, 400a, 410ap, 420a,
 430a, 470a, 480a, 490a, 500eph, 510eph, 520eph,
 530eph, 540eph, 550eph, 560eph, 570eph, 590eph,
 600acpm, 610acpm, 620acpm, 630acpm, 640acpm,
 650acpm, 660acpm, 670am, 680acpm, 690acpm, 700p,
 710ps, 790ps, 800c, 810c, 820c, 830c, 840ac, 850c, 860c,
 870ac, 880c, 890c, 910ps, 970sc.

OHIO

SPRINGFIELD:

Wittenberg College-----
 Biological laboratory, W. C. Beaver.
 Chemistry laboratory, R. F. Dunbrook.

000b, 010b, 020b, 030b, 100cb, 110cb, 120b, 130b, 250b,
 500c, 570c, 590c, 600c, 620c, 630c, 640c, 650c, 660c,
 670c, 680c, 690c, 830c, 850c, 880b, 890c.

PENNSYLVANIA

PHILADELPHIA:

Philadelphia Textile School-----
 Chemical laboratory, E. C. Bertolet.
 Design laboratory, B. C. Algeo.
 Physical laboratory, E. W. France.

230c, 280c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp,
 370cp, 390cp, 800c, 870c.

SOUTH CAROLINA

CHARLESTON:

The Citadel, The Military College of South
 Carolina.
 Chemistry laboratory, L. Knox.
 Engineering materials laboratories, L. S.
 Le Tellier.
 Physics laboratory, N. F. Smith.

300c, 400ips, 410ips, 500cips, 510cips, 520c, 530c,
 600cips, 610c, 630c, 640c, 650c, 680c, 690c, 710s.



