

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

DIRECTORY
OF
COMMERCIAL TESTING AND
COLLEGE RESEARCH
LABORATORIES

MISCELLANEOUS PUBLICATION M125
(Superseding Miscellaneous Publication M90)

NATIONAL BUREAU OF STANDARDS PUBLICATIONS ON TESTING

There are listed below a few of the official publications of the National Bureau of Standards relating to certain phases of testing, including Research Papers (RP), Scientific Papers (S), Technologic Papers (T), Circulars (C), and Miscellaneous Publications (M). Copies of the pamphlets can be obtained, at the prices stated, only from the Superintendent of Documents, Government Printing Office, Washington, D. C. In ordering pamphlets from the Superintendent of Documents, the Bureau publication *symbol and number must be stated*, and the order must be accompanied by cash. The publications indicated by an asterisk (*) are out of print but may be consulted at Government Depository libraries.

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- Accelerated weathering tests of soldered and tinned sheet copper, RP422. Price 10c.
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- Hydrometers, testing of, C16. Price 5c.
- Inks, their composition, manufacture, and method of testing, C400. Price 10c.
- Lamp life-testing equipment and methods, recent developments in, T325. Price 15c.
- *Lamps, incandescent, life testing of, S265.
- Lamps, motor-vehicle headlighting, C276. Price 20c.
- Length, testing of line standards of, C332. Price 10c.
- Magnetic testing (4th ed.), C17. Price 15c.
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- Radio receiving sets, some methods of testing, T256. Price 10c.
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(Continued on p. 3 of cover)

U. S. DEPARTMENT OF COMMERCE

DANIEL C. ROPER, Secretary

NATIONAL BUREAU OF STANDARDS

LYMAN J. BRIGGS, Director

NATIONAL BUREAU OF STANDARDS MISCELLANEOUS PUBLICATION M125

DIRECTORY

OF

COMMERCIAL TESTING AND COLLEGE RESEARCH LABORATORIES

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IN ACCORDANCE with law the National Bureau of Standards makes tests and carries out investigations for other Government agencies. Owing 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 and able to test. Information is given herein concerning 244 commercial testing laboratories, with 67 branch laboratories or offices. There is also presented a list of the laboratories of 200 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 more than 520 lists of manufacturers who have expressed their willingness to certify to purchasers that material supplied on orders based on the indicated 520 Federal specifications and commercial standards 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 list 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.

Examples 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: Pittsburgh Testing Laboratory, 1706 Second Avenue. Southern Testing Laboratories, 2227 First Avenue South. A. W. Williams Inspection Co., P. O. Box 97, Fairview Station.	<i>See</i> Pittsburgh. 400p, 410p, 500cp, 510cp, 530cp, 600cp, 610cp, 620cp, 630cp, 680cp, 720p (railway equipment), 850c, 880c. <i>See</i> Mobile.
MOBILE: A. W. Williams Inspection Co., P. O. Box 314. (Branches at Charleston, S. C., Brunswick, Ga., Shreveport, La., Atlanta, Ga., Birmingham, Ala.)	400api (wood and preservative treatment of wood), 410api, 420api, 800cp.

ARIZONA

BISBEE: Ralph L. Motz, P. O. Box 919-----	600c, 640c, 650c, 660c, 680c, 690c.
KINGMAN: E. Ross Householder, Fifth and Spring Streets.	640c, 660, 680c (zinc), 690c (ores).
NOGALES: Miller's Assay Office, 233 Grand Avenue.	590c, 650c, 660c, 690c.
TUCSON: A. L. Pellegrin & Son, 339 South Stone Avenue. (Branch at Calexico, Calif.)	500cm, 570cm, 600cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 850cm.

CALIFORNIA

CALEXICO: A. L. Pellegrin & Son, 112 Rockwood Avenue.	<i>See</i> Tucson, Ariz.
FRESNO: The Twining Laboratories, 2527 Fresno Street.	000b, 010cb, 020cb, 030cb, 040cpal, 050cpa, 060cpa, 070cpa, 090cpa, 100cbas, 110cbas, 120cbas, 130cbas, 140cbas, 150cbas, 160cbas, 170chas, 200cpeas, 210ceas, 220cas, 230cbas, 240cba, 250sb, 260cb, 280cbps, 290cbas, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa, 400cp, 410cp, 420cp, 430cp, 470cpa, 480cp, 490cpa, 500chp, 510cpai, 520cpa, 530cphi, 540cpha, 550cpe, 560cp, 570cp, 590cp, 600cpmi, 610cpmi, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 670ps, 680cpm, 690cpmes, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800ct, 810cbt, 820c, 830cbt, 840cpa, 850cb, 860cp, 870cb, 880cb, 890cbt, 910s, 930pas, 940pi, 950pi, 970pi, 980pi, 990pi.
LOS ANGELES: American Gas Association Testing Laboratories, 718 Towne Avenue. Atkin and McRae, 747 South Hill Street----	<i>See</i> Cleveland, Ohio.
Baverstock & Payne, 552 South Figueroa Street.	500c, 510c, 520c, 530c, 550c, 570c, 590c, 600c, 630c, 640c, 650c, 680c, 690c, 850c, 880c.
California Testing Laboratories (Inc.), 1429 Santa Fe Avenue.	020c, 040c, 100c, 110c, 120t, 130ct, 140c, 160c, 170c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
George W. Gooch Laboratories (Ltd.), 1431½ Santa Fe Avenue. John Herman, 771 San Julian Street, Va. 6--	000t, 010bc, 020bc, 030bc, 040cpa, 090c, 100ac, 110c, 120ct, 130ct, 140c, 150c, 160c, 170c, 200cp, 210c, 280c, 290ct, 300ap, 310ap, 320ap, 330ap, 340ap, 410pi, 470aci, 500cpi, 510cpma, 520cma, 530acpm, 540acp, 550acm, 570c, 590c, 600acpm, 610acpm, 620acm, 630c, 640cp, 650cp, 660c, 680c, 690c, 700i, 740i, 750is, 800c, 810ct, 820c, 830c, 840cp, 850c, 860c, 870c, 880cb, 890c, 910p, 930ct, 950s, 970c.
Robert W. Hunt Co., Engineers, 551 Chamber of Commerce Building.	010c, 040c, 110c, 120c, 130cp, 140cp, 570c, 850c, 870c. 520c, 530c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660cm, 680c, 690ca, 750p, 830c, 850c, 890c. <i>See</i> Chicago, Ill.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

CALIFORNIA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
LOS ANGELES—Continued. Los Angeles Testing Laboratory, 1300 South Los Angeles Street.	000cp, 010cp, 020cp, 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, 870cp, 880cp, 890cp, 910cp, 930cp, 940cp, 950cp, 970cp, 980cp, 990cp.
Arthur R. Maas Laboratories, 308 East Eighth Street.	000c, 010c, 020c, 030c, 040c, 050ca, 060c, 070ca, 090ca, 100ca, 110c, 120c, 130ca, 140c, 150ca, 160c, 170ct, 200c, 210c, 220ca, 230cp, 280cpa, 290c, 300cpa, 360cpa, 470cpa, 500cpa, 510cp, 520c, 530c, 540c, 570c, 600c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810act, 820c, 830act, 840c, 850c, 870c, 880c, 890c.
Raymond G. Osborne Laboratories, Rives-Strong Building.	020c, 030c, 040ac, 060c, 090ac, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200ci, 210c, 220c, 230c, 260c, 280c, 290c, 300c, 310c, 320cp, 330cp, 340c, 360c, 370c, 390c, 400cpi, 410cpi, 420cpi, 430cp, 470cpi, 490cpi, 500cpia, 510cpia, 520cpai, 530cpai, 540cpai, 550cpai, 560cpai, 570cpai, 590cpai, 600acpim, 610acpim, 620acpim, 630acpim, 640acpim, 650acpim, 660acpi, 680acpi, 690acpi, 700alps, 720alps, 730alps, 740alps, 750alps, 760alps, 770alps, 780alps, 790alps, 800cpi, 810acpi, 820cpi, 830cpi, 840acpsi, 850ci, 870cai, 880cpia, 890cpi, 930c, 940cpi, 950cpi, 970cpi. 980cpia, 990cpia.
Smith-Emery Co., 920 Santee Street-----	000abc, 010c, 020cb, 030c, 040c, 060c, 090c, 100c, 110cb, 120cb, 130c, 140cpa, 150ca, 160c, 170cb, 200cbp, 210cp, 220c, 240c, 280c, 290c, 300cp, 310c, 320c, 330c, 340c, 360cp, 370cp, 390cp, 400c, 410c, 470cp, 490cp, 500c, 510c, 520cpm, 530cm, 540c, 550c, 570ci, 590cim, 600cim, 610ci, 620cm, 630cm, 640cm, 650cm, 680cm, 690cm, 700pi, 710pi, 740pi, 750pi, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880cb, 890c, 910p, 930cp, 950cp, 970c, 980cp, 990cp.
Western Precipitation Co., 1016 West Ninth Street.	010c, 020c, 030c, 040c, 060c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 260c, 280c, 290c, 300c, 310c, 340c, 360c, 370c, 390c, 400c, 470c, 490c, 500c, 510c, 520c, 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, 620chp, 630chp, 710chps, 820c, 870cp, 880cph, 910acehps.
PASADENA: R. C. Burt Scientific Laboratories, 211 Clay Street.	
SAN FRANCISCO: Curtis & Tompkins (Ltd.), 236 Front Street.	010c, 020c, 030c, 040cb, 050c, 060c, 090c, 100ci, 110cb, 120ca, 130ci, 140ci, 150c, 160c, 170ca, 200c, 210c, 220c, 230c, 240c, 260c, 280c, 290c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 470c, 490c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 970c.
Abbot A. Hanks (Inc.), 624 Sacramento Street.	140c, 410c, 470c (pulp), 500cp, 510cpi, 530c, 540pi, 550c, 570cp, 590c, 600cpi, 610cpi, 620c, 630c, 640cp, 650c, 660c, 680c, 690c, 840cp, 880c, 890c.
Robert W. Hunt Co., Engineers, 251 Kearney St.	<i>See Chicago.</i>
Pacific Chemical Laboratories, 617 Montgomery Street.	020bc, 030bc, 040bc, 090abc, 100abc, 110abc, 140c, 150bc, 160c, 170abcis, 210c, 220c, 230c, 260a, 280bc, 300ac, 310ac, 340c, 360ac, 370ac, 390ac, 470ac, 490ac, 500c, 510c, 570c, 590c, 630c, 800c, 810c, 820c, 830c, 840ac, 850c, 870c, 880c, 890c.
The Shaw Laboratory, 1155 California Street.	040a, 050a, 060a, 090a, 100a, 110a, 120a, 130a, 140a, 150a, 160a, 170a, 200a, 210a, 220a, 240a, 280a, 290a, 300a, 310a, 320a, 330a, 340a, 360a, 370a, 390a, 400a, 410a, 470a, 490a, 510a, 530a, 540a, 550a, 590a, 600am, 620am, 630am, 640am, 650am, 680am, 690am, 840a.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

CALIFORNIA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
SAN FRANCISCO—Continued. Smith-Emory and Co., 651 Howard Street--	000abc, 010c, 020cb, 030c, 040c, 060c, 090c, 100c, 110cb, 120cb, 130c, 140cpa, 150ca, 160c, 170cb, 200cbp, 210cp, 220c, 240c, 280c, 290c, 300cp, 310c, 320c, 330c, 340c, 360cp, 370cp, 390cp, 400c, 410c, 470cp, 490cp, 500c, 510c, 520cpm, 530cm, 540c, 550c, 570ci, 590cim, 600cim, 610ci, 620cm, 630cm, 640cm, 650cm, 680cm, 690cm, 700pi, 710pi, 740pi, 750pi, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880cb, 890c, 910p, 930cp, 950cp, 970c, 980cp, 990cp.
Wildberg Bros. Smelting & Refining Co., 742 Market Street.	630c, 640c, 650c, 660c, 680c.

COLORADO

DENVER: William Ainsworth & Sons (Inc.), 2151 Lawrence Street. Paul S. Nice, 312 Seventeenth Street-----	500s (transformer oil), 700s, 710s, 910s. 000abci, 010abci, 020abci, 030abci, 040abci, 050abci, 060abci, 070abci, 090abci, 100abet, 110abet, 120abet, 130abet, 140abet, 150abet, 160abet, 170abet, 200abc, 210abc, 220abc, 230abc, 260abc, 280abc, 290abc, 300ac, 310ac, 320ac, 330ac, 340ac, 360ac, 370ac, 390ac, 500achl, 560ac, 600acm, 620ac, 630ac, 640ac, 650ac, 660ac, 680acm, 690acm, 800c, 810c, 820c, 830c, 840ac, 850ac, 870abc, 880abc, 890abc.
Pierce Testing Laboratories, 730 Nineteenth Street. (Branch at Pueblo.)	390cpi, 400cpi, 410cpi, 420pi, 500cp, 510cpi, 520cpi, 530cpi, 540cpi, 550cpi, 570cp, 590cp, 600cpi, 610cpi, 620cpi, 630cpi, 640cpi, 650cpi, 680cpi, 690cpi, 750i, 800cpi, 840cpi, 850cpi, 890cp.
J. W. Richards & Son, 1118 Nineteenth Street.	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.
Root & Simpson, 1306 East Seventeenth Avenue.	630cm, 640cm, 650cm, 660cm, 680cm.
Henry E. Wood Assaying Co., 1750 Ara- pahoe Street.	500c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm.
PUEBLO: Pierce Testing Laboratories-----	See Denver.

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., 296 Home- stead Avenue. The Henry Souther Engineering Co., 11 Laurel Street.	600himp, 610himp. 020c, 040c, 060cp, 140c, 170c, 200c, 280c, 410p, 470cp, 500cp, 510p, 600cpm, 630cpm, 640cpm, 650cpm, 680cpm, 880c.
PORTLAND: Connecticut State Highway Depart- ment Testing Laboratory, Marlborough Street.	140acp, 200ap, 300p, 500acp, 510acp, 530p, 600acp, 630p, 800acp, 840acp, 870acp, 890acp, 970acp, 990acp.

DISTRICT OF COLUMBIA

WASHINGTON: J. L. Finck Laboratories, The, 1713 K Street NW. Henry C. Fuller Laboratory, 1835 Eye Street NW.	300h, 320h, 360h, 490h, 510h, 520h, 530h, 540h, 590h, 950h. 000ct, 010c, 020c, 030cb, 040c, 090cb, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170cb, 200c, 210c, 220c, 230c, 260c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810cb, 820c, 830c, 840c, 850c, 870cb, 880cb, 890cb.
John R. Lapham, 2033 G Street NW-----	410p, 500p, 510p, 530p, 600p, 610p.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

FLORIDA

Name and address of laboratories	Commodities and nature of tests ¹
MIAMI: The H. C. Nutting Co., 1010 Twentieth St. NW.	See Cincinnati.

GEORGIA

ATLANTA:	
The Dumas Laboratory, 407 Five Ivy Street Building.	010c, 020c, 040, 090c, 110c, 140c, 150c, 170c, 500c, 510c, 530c, 570c, 590c, 630c, 640c, 650c, 680c, 840c, 850c, 870c, 880c, 950s.
Law & Co. (Inc.), 16 East Baker Street----	See Wilmington, N. C.
Pittsburgh Testing Laboratory, 721 Argier Avenue NE.	See Pittsburgh.
State Highway Board of Georgia, 2 Capitol Square.	400i, 500cp, 510p, 530p, 600cp, 800cp, 840cp.
A. W. Williams Inspection Co., P. O. Box 74, Station "A."	See Mobile, Ala.
BRUNSWICK: A. W. Williams Inspection Co., P. O. Box 2.	See Mobile, Ala.
CORDELE: Law & Co. (Inc.)-----	See Wilmington, N. C.

ILLINOIS

CAIRO: Barrow-Agee Laboratories, Board of Trade Building.	See Memphis, Tenn.
CHICAGO:	
Associated Electric Laboratories (Inc.), 1033 West Van Buren Street.	470aceps, 490aceps, 710aehilps, 800c, 820c, 890c, 910aeilps, 970acips, 990ailps.
Block Laboratories, 43 East Ohio Street----	010ac, 020ac, 030ac, 040aclp, 050ac, 060ac, 070ac, 090ac, 100ac, 110ac, 120ac, 130ac, 140acl, 150ac, 160ac, 170ac, 200acep, 210acp, 220ac, 230ac, 260ac, 280acips, 290ac, 300ac, 310ac, 320ac, 330ac, 360ac, 370ac, 390ac, 470ac, 500ac, 540ac, 630acp, 640acp, 650acp, 660ac, 680acp, 800ac, 810act, 820ac, 830ac, 840ac, 850ac, 860ac, 870ac, 880ac, 890ac, 970acehp.
George Borrowman, 9 South Clinton Street--	010ct, 020ct, 030ct, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 240c, 250c, 280c, 290c, 300c, 320c, 330c, 340c, 360c, 370c, 390c, 470c, 500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660c, 680c, 690cm, 800c, 810ct, 820c, 830c, 840c, 850c, 870ct, 880c, 890c.
Chicago Testing Laboratory (Inc.), 536 Lake Shore Drive.	140acp, 200acp, 210cp, 500acips, 510acpis, 530acpis, 800acpis.
The Columbus Laboratories, 31 North State Street.	000abet, 010abc, 020abc, 030abc, 040abc, 050abc, 060abc, 070abc, 090a, 100abc, 110abc, 120abc, 130abc, 140abc, 150abc, 160abc, 170abc, 200abc, 210abc, 220abc, 230abc, 240abc, 250b, 260abc, 280abc, 290abc, 300abc, 310abc, 320abc, 330abc, 340abc, 360abc, 370abc, 390abc, 400abc, 410abc, 420abc, 430abc, 470abc, 480abc, 490abc, 500abc, 510abc, 520abc, 530abc, 540abc, 550abc, 570abc, 590abc, 800abc, 810abc, 820abc, 830abc, 840abc, 850abc, 860abc, 870abc, 880abc, 890abc, 950abc, 970abc, 980abc, 990abc.
Commercial Testing and Engineering Co., 360 North Michigan Avenue (branches at Charleston, W. Va., Toledo, Ohio).	500cp, 510cp, 530cp, 570cp, 880c.
Dearborn Chemical Co., 310 South Michigan Avenue.	210c, 230c, 500cp, 630c, 680c, 840c, 880cp, 890cp.
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.
Finishing Research Laboratories (Inc.), 123 North Jefferson 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.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

ILLINOIS—Continued

Name and address of laboratories	Commodities and nature of tests ¹
CHICAGO—Continued. Walter H. Flood & Co., 822 East Forty-second Street. (Branch at Jackson, Miss.). Gulick-Henderson Co. (Inc.), 431 South Dearborn Street. E. F. Houghton & Co., 3516 Shields Avenue. Robert W. Hunt Co., Engineers, 175 West Jackson Boulevard. (Branches at New York, N. Y.; Pittsburgh, Pa.; St. Louis, Mo.; San Francisco, Calif.; Portland, Ore.; Los Angeles, Calif.; Philadelphia, Pa.; New Orleans, La.; Montreal, Toronto, Canada; Vancouver, B. C.; London, England; Brussels, Belgium.) Charles C. Kavin Co., 431 South Dearborn Street. (Branches at Buffalo, N. Y., and Cincinnati, Ohio.) The Miner Laboratories, 9 South Clinton Street. Paper Laboratories (Inc.), 1700 Prairie Avenue. Phoenix Chemical Laboratory, 3953 Castello Avenue. Pittsburgh Testing Laboratory, 205 West Wacker Drive. The Don L. Quinn Co., 609 North La Salle Street. Research Laboratories of the Portland Cement Association, 33 West Grand Avenue. Servicised. Products Corporation, 6051 West Sixty-fifth Street. Siebel Institute of Technology, 958 Montana Street. United States Testing Co., 11,118 Merchandise Mart. E. H. Ward and Co., 608 South Dearborn Street. QUINCY: Central Fibre Products Co., 830 South Front Street.	500acipl, 510acip, 530cpi, 640c, 800acip. See Pittsburgh. See Philadelphia, Pa. 060cips, 140c, 200cp, 210c, 280c, 300acipsx, 400acipsx, 410acipsx, 420acipsx, 430achisx, 500achips, 510acimpsx, 520acip, 530achipsx, 540acipsx, 550achimpsx, 560acmpx, 570achipsx, 590acipsx, 600achimpsx, 610impsx, 620achimpsx, 630cimpsx, 640cimpsx, 650cimpsx, 660cimpsx, 680cimpsx, 690cimpsx, 700ahipsx, 710ahipsx, 720aips, 730aips, 740aips, 750aips, 760aips, 780aips, 790aips, 800cis, 820c, 830c, 840acips. 500c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c. 010c, 020c, 030c, 040c, 050c, 060c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210c, 220c, 280c, 290c, 300c, 320c, 330c, 360c, 370c, 390c, 810c, 870c, 880c, 890c, 990c. 470cpa, 480cpa, 490acp. 040c, 500cp. See Pittsburgh, Pa. 950p. 510cp. 500cp. 020c, 090c, 100cp, 110c, 140cp, 150cp, 160c, 17Ccpb, 210c, 500ch, 820c, 880c. See Hoboken, N. J. 300ci, 360ci, 390ci, 400i, 410i, 500c, 510ci, 530c, 540c, 550c, 570c, 590c, 630c, 640c, 650c, 680c, 690c, 700is, 710is, 720is, 730is, 740is, 750is, 760is, 780is, 790is, 800c, 820c, 840c. 470aspic.

INDIANA

HAMMOND: The Indiana Laboratories Co., 477 Logan Street.	010c, 020c, 040acp, 050acp, 090acp, 100aspic, 110aspic, 120aspic, 140aspic, 160aspic, 170aspic, 500aspic, 510c, 520ac, 530ac, 540ac, 550ac, 570ac, 590ac, 600aspic, 610aspic, 620aspic, 630aspic, 640aspic, 650aspic, 660aspic, 680aspic, 690aspic, 840aspic, 850aspic, 870ac, 880ac, 890aspic.
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IOWA

DES MOINES: Howard C. Maffitt, 522 Eleventh Street-----	000ca, 010cb, 020cb, 030cb, 040cp, 050c, 060c, 070c, 090cba, 100cb, 110c, 120c, 130c, 140cp, 150c, 160c, 170cb, 200c, 210c, 220c, 230c, 240c, 250c, 260c, 280c, 290c, 300ca, 310ca, 320ca, 330ca, 340ca, 360ca, 370ca, 390ca, 400c, 410c, 420c, 430c, 470ca, 480ca, 490ca, 500cph, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660c, 680cm, 690c, 800cp, 810c, 820c, 830c, 840cp, 850c, 860c, 870c, 880cb, 890c, 930c, 940c, 950c, 970c, 980c, 990c.
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¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

IOWA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
DES MOINES—Continued. Patzig Testing Laboratories, 2215 Ingersoll Avenue.	020cp, 040cpa, 170cp, 300cp, 320cp, 360cp, 370cp, 390cp, 400pi, 410pi, 420pi, 500cphi, 510cpi, 530cph, 540cp, 550cp, 570cp, 590cph, 600cpi, 610cpi, 620cpi, 630cpi, 640cpi, 650cp, 680cpi, 690cpi, 710ie, 750pi, 790i, 800cpi, 840cpi, 850c, 870cpi, 880c, 910i.

KANSAS

WICHITA: United Laboratories, 240 North St. Francis Street, Fourth Floor Coleman Lamp & Stove Co. Administration Building.	500acips.
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KENTUCKY

LOUISVILLE: Janes & Breckler (Inc.), 107 South Fourth Street.	020bc, 040c, 090c, 100c, 140c, 170c (whiskey), 260c, 500cp, 510cp, 530cp, 570c, 600cp, 610cp, 620cp, 630c, 640cp, 650c, 680c, 690c, 800cp, 850c, 870c, 880c.
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LOUISIANA

NEW ORLEANS: John C. P. Helm, 509 Tchoupitoulas Street— Robert W. Hunt Co., Engineers, 633 Canal Bank Building. Pittsburgh Testing Laboratory, 816 Howard Avenue. The Rice Millers Association, P. O. Box 1289. Shilstone Testing Laboratory, 510 Gravier Street. (Branch at Houston, Tex.).	140c, 870c. <i>See</i> Chicago. <i>See</i> Pittsburgh, Pa. 100cs (rice). 020abc, 040abc, 100ac, 110c, 120ac, 140c, 150abc, 160c, 170abc, 220abc, 280c, 290abc, 400ip, 410i, 470p, 500c, 510ci, 530cih, 540ci, 550c, 570c, 600c, 610cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 700i, 710i, 780i, 790i, 800c, 810abc, 820c, 830c, 840ac, 850c, 860c, 870c, 880c, 890c.
SHREVEPORT: Barrow-Agee Laboratories, 721½ Marshall Street. A. W. Williams Inspection Co., P. O. Box 324.	<i>See</i> Memphis, Tenn. <i>See</i> Mobile, Ala.

MAINE

LEWISTON: A. B. Andrews, 14 Lisbon Street----	400c, 470c, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 910c (clinical materials).
PORTLAND: Hamlin & Morrison, 11 Exchange Street.	<i>See</i> Philadelphia.

MARYLAND

BALTIMORE: E. L. Cornwell & Co., 921 South Wolfe Street. Gascoyne & Co. (Inc.), 27 South Gay Street. Hamlin & Morrison, 502 East Pratt Street— Penniman & Browne, 341 St. Paul Place----	<i>See</i> Philadelphia. 020c, 030c, 040c, 060c, 090c, 100ca, 110ca, 140c, 170c, 260c, 290c, 360c, 390c, 500cp, 510cp, 570c, 590c, 640c, 650c, 660c, 680c, 850acip, 870c, 890c. <i>See</i> Philadelphia. 010cb, 020cb, 030cb, 040cb, 090cb, 100cb, 110cb, 120cb, 130cb, 140cb, 150cb, 160cb, 170cb, 200c, 210c, 220c, 230c, 280c, 290c, 300cp, 310cp, 320cp, 330cp, 340cp, 390cp, 500cs, 510cs, 520cs, 530cs, 540cs, 550cs, 570cs, 590cs, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
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¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

MARYLAND—Continued

Name and address of laboratories	Commodities and nature of tests ¹
BALTIMORE—Continued. Strasburger & Siegel, 15 South Gay Street.	010bc, 020bc, 030bc, 040cbp, 100c, 110c, 120abc, 130ac, 140c, 150abc, 160abc, 170abc, 200c, 210c, 220c, 280c, 300ac, 310ac, 320ac, 330ac, 340ac, 360ac, 370ac, 390ac, 470ac, 500cp, 520c, 530c, 540c, 570c, 640c, 650c, 680c, 800bc, 810c, 820c, 830c, 840c, 850c, 870c, 880bc, 890c.
Wiley & Co. (Inc.), Calvert and Read Streets.	021c, 030c, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 170c, 260c, 280c, 470c (wood pulp), 490c, 500c, 530c, 540c, 570c, 820c, 850ci, 890c, 990c.

MASSACHUSETTS

BOSTON:	
Associated Factory Mutual Fire Insurance Companies, 184 High Street.	040h, 140h, 200cps, 510ips, 640ips, 710ips, 840eps, 970cps.
Bigelow, Kent, Willard and Co. (Inc.), Park Square Building.	630c, 070ac, 090c (glue), 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.
W. C. Durfee Co. (Inc.), 114 Federal Street.	230c, 300c, 310c, 360, 370c, 800c.
Metcalfe & Eddy Laboratory, Statler Building.	040c, 500cp, 510cp, 530cp, 880abcip.
George W. Miles, 88 Broad Street.	000c, 010c, 020c, 030c, 040c, 050c, 060c, 070c, 090c, 100c, 110c, 140c, 160c, 170c, 200c, 210c, 220c, 280c, 470c, 490c, 500c, 530c, 540c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Oil Testing Laboratories, 8 Beacon Street.	040cp, 140cp, 500achlp, 510cp, 800cp, 810cp, 840c, 860ci (gas explosion hazards), 870c, 950its (oil tanks), 970c.
Skinner & Sherman (Inc.), 246 Stuart Street.	010bc, 020bc, 030bc, 040c, 060c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170abc, 200cp, 200c, 260c, 280c, 290c, 300cp, 310cp, 360cp, 470abcp, 490abcp, 500cp. 510cp, 530c, 590c, 600cp, 640c, 680c, 800c, 810ac, 820c, 830c, 840cp, 850c, 870c, 880abc, 890c.
The Thompson & Lichtner Co. (Inc.), 620 Newbury Street.	200acp, 290acp, 390acp, 400acpi, 410acpi, 420acpi, 470acp, 500acpi, 510acpi, 530acpi, 600cpi, 610cpi, 620cpi, 630cpi, 640cpi, 650cpi, 680cpi, 690cpi, 720pi, 730pi, 740pi, 750pi, 760pi, 790pi. 840c, 870c, 890c.
J. R. Worcester & Co., 79 Milk Street.	510ip.
CAMBRIDGE:	
General Radio Co., 30 State Street.	710is, 910is.
Dr. A. H. Gill, 222 Charles River Road.	040cap, 060cap, 140cap, 200c, 210cap, 220ac, 470ca, 500cap, 800c, 820c, 840ca, 870ca, 910c, 930cap, 970c.
Prof. George B. Haven, Textile Laboratory, Charles River Road.	300ap, 310ap, 320ap, 330ap, 340ap, 360ap, 370ap, 390ap.
Arthur D. Little (Inc.), 30 Charles River Road.	010abc, 020abc, 030abc, 040abcp, 060ac, 090abc, 100abc, 110abc, 120abc, 130abc, 140abcp, 150ac, 160abc, 170abc, 200acehp, 210acp, 220abc, 230acp, 260c, 280abcp, 290abcp, 300acp, 310acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acehp, 400ac, 420cp, 470acp, 480acp, 490acehp, 500achp, 510achp, 520acehp, 530acehp, 540acp, 550ace, 570ac, 590acehp, 600acmp, 610acmp, 620acmp, 630acmp, 640acmp, 650acmp, 660acmp, 680acmp, 690acmp, 700cp (wires, cables), 740cp (rope), 800bcp, 810bc, 820c, 830bc, 840ac, 850c, 870abcp, 880bc, 890acp, 930acp, 950acp, 970c, 990acp.
FITCHBURG: United States Testing Co., 59 West Street.	See Hoboken.
LOWELL: United States Testing Co., Crosby Street.	See Hoboken.
PEABODY: The R & M Industrial Laboratories, 4 Union Street.	060cp, 230c.
SPRINGFIELD: New England Laboratories (Inc.), 44 Chestnut Street.	020cp, 040cp, 470cp, 500hl, 510c, 530c, 540c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 830c, 880b.
WESTFIELD: Westfield Testing & Research Laboratories, 102 Elm Street.	020cpa, 140cpa, 150cp, 160cpa, 170cp, 870cp, 880cpb.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

MICHIGAN

Name and address of laboratories	Commodities and nature of tests ¹
DETROIT: The Detroit Testing Laboratory, 554 Bagley Avenue.	010cb, 020cb, 040cb, 050cb, 060cp, 090cp, 100cb, 110cb, 120cb, 130cb, 140cb, 150cb, 160cb, 170cb, 200c, 210cb, 220c, 230cb, 260c, 280c, 290c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 400ip, 410ip, 420ip, 430ip, 470ip, 490cp, 500cp, 510cp, 520p, 530cp, 549cp, 550cp, 570cp, 590cp, 930cp, 940cp, 950cp, 970cp, 980cp, 990cp.
Perry Testing Laboratory, 201 Third Street.	200cp, 280c, 300cp, 330cp, 340cp, 360cp, 370cp, 400p, 410p, 470cp, 490cp, 500c, 510cp, 520cp, 530cp, 540cp, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 800c, 820c, 830c, 840c, 850c, 880c, 890c. See Pittsburgh.
Pittsburgh Testing Laboratory, 429 Wayne Street.	See Pittsburgh.
SOUTH HAVEN: Hamlin & Morrison, 514 Williams Street.	See Philadelphia.

MINNESOTA

DULUTH: Minnesota Testing Laboratories (Inc.), 318 Glencoe Building.	020c, 100c, 110c, 140c, 170c, 500cp, 510cp, 520cp, 530cp, 540c, 550c, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 790cp, 800cp, 820c, 830c, 840c, 850c, 870c, 880cp, 890c, 990c.
MINNEAPOLIS: The Howard Laboratory, 324 Fourth Avenue, South.	020acp, 100acps, 110acps, 120acp, 130acp, 140acp, 150acp, 160acp, 170acp, 240acp, 280acp, 290acp, 850acp, 870acp, 890acp.
Van Cleve Laboratories (Inc.), 322 South Fourth Street.	010bc, 020bcp, 040abcp, 090abcp, 110ca, 120cab, 130cab, 140cabp, 150c, 160cb, 170cab, 200abcp, 220acp, 260c, 300abcp, 400abcp, 470cp, 490abcp, 500cpa, 510cp, 520c, 530c, 540c, 570c, 590c, 600cpam, 620cp, 630cpam, 640cpam, 650cpam, 660cpam, 680cpam, 690cpam, 800 cp, 810ct, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.

MISSISSIPPI

JACKSON: Barrow-Agee Laboratories, 301½ West Pearl Street.	See Memphis, Tenn.
Walter H. Flood & Co., 321 Daniel Building.	See Chicago.
LELAND: Barrow-Agee Laboratories, 209 Main Street.	See Memphis, Tenn.
MERIDIAN: N. E. Katz, 3117 Seventh Street...	010abct, 020abct, 030abct, 040abct, 100abct, 110abct, 120abct, 130abct, 140abct, 150abct, 160abct, 170abct, 220abct, 240ac, 280ac, 290ac, 500acp, 510acp, 530acp, 540acp, 550acp, 570acp, 590acp, 600c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800acs, 810acs, 820acs, 830acs, 840acs, 850acs, 870acs, 880acs, 890acs.

MISSOURI

JEFFERSON CITY: Missouri State Highway Commission, Capitol Avenue.	210cp, 400ip, 470p, 500cp, 510cip, 530cp, 600 cip, 640c, 800cp, 840cip, 880cp.
JOPLIN: The Bruce Williams Laboratories, 620 Joplin Street. (Branch at Pitcher, Okla.)	020bc, 040c, 100c, 110c, 140c, 160c, 170c, 600c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
KANSAS CITY: Industrial Testing Laboratory (Inc.), 928 Wyandotte Street.	010c, 020cb, 040c, 090c, 100c, 110c, 120ct, 130ct, 140c, 150c, 160c, 170c, 500ca, 510p, 530c, 540c, 570c, 590c, 600cp, 630cp, 640cp, 680cp, 690cp, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Standard Electrical Instrument Laboratories, 1529 Cherry Street.	710espi, 910espi.
ROLLA: Missouri Clay Testing and Research Laboratories, Missouri School of Mines and Metallurgy.	510cap, 520cap, 530pchames, 540ampe, 570chas (magnesia), 590capehs.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

MISSOURI—Continued

Name and address of laboratories	Commodities and nature of tests ¹
ST. LOUIS:	
Robert W. Hunt Co., Engineers, 1403 Syndicate Trust Building.	See Chicago.
Laclede-Christy Clay Products Co., 1711 Ambassador Building.	530cph.
Nowak Chemical Laboratories, 721 Olive Street.	100abc, 170abc.
Pittsburgh Testing Laboratory, 7815 Olive Street Road.	See Pittsburgh, Pa.
H. E. Wiedemann, 1604 Chemical Building--	010ac, 020ac, 030ac, 040ac, 050ac, 060ac, 070ac, 090ac, 100ac, 110ac, 120ac, 130ac, 140ac, 150ac, 160ac, 170ac, 200ac, 210ac, 220ac, 230ac, 240ac, 250ac, 260ac, 280ac, 290ac, 300ac, 310ac, 320ac, 330ac, 340ac, 360ac, 370ac, 390ac, 470ac, 490ac, 500ac, 510ac, 520ac, 530ac, 540ac, 570ac, 800ac, 810ac, 820ac, 830ac, 840ac, 850ac, 860ac, 870ac, 880ac, 890ac.

NEBRASKA

OMAHA:	
Omaha Testing Laboratories (Inc.), 1912 Farnam Street.	010c, 020cb, 040cp, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170cb, 290c, 500cp, 510cp, 530cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 800c, 840c, 850c, 870c, 880c, 890c.
United Laboratories, 4001 South Twenty- fourth Street.	010abc, 020abc, 040acp, 090c, 100abc, 140abc, 150abc, 160abc, 170abc, 200c, 280ac, 290abc, 500cp, 510cip, 590c, 620cp, 640cp, 650cp, 660cp, 680cp, 690cp, 810abc, 830c, 850c, 870c, 880cb, 890c.

NEVADA

CARSON CITY: State of Nevada Department of Highways.	400i, 500cp, 510icp, 590cp, 600icp, 610icp, 800c, 840cp.
GOLDFIELD: Downer Brothers, 418 North Co- lumbia Street.	640cmp, 650cmp, 660cmp.
LOVELOCK: A. H. Scott Assay Office, Broadway--	500ch, 510cp, 530ch, 540cp, 550c, 570c, 590ci, 600c, 610c, 620c, 630c, 640c, 650ch, 660ch, 680c, 690chp, 850c, 860c, 880c, 890c.

NEW HAMPSHIRE

CONCORD: New Hampshire Highway Depart- ment Testing Laboratory.	500cp, 510cp, 530p, 600cp, 690cp, 800cp, 840cp, 890cp.
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NEW JERSEY

BURLINGTON: William R. Conard, 321 High Street.	400ap, 410ap, 510p, 530ap, 600apc, 610apc, 620apc, 640apc, 690apc, 700ps, 710ps, 740ps, 750ps, 790ps.
CARLSTADT: Frederick J. Maywald, 301 Ho- boken Road.	020ac, 030ac, 040ac, 100aci, 150ac, 170ac, 200acs, 210acs, 220acs, 230acs, 260acs, 280acs, 300acs, 310acs, 320acs, 330acs, 340acs, 360acs, 370acs, 390acs, 400acs, 410acs, 420acs, 430acs, 470acs, 480acs, 490acs, 500acs, 520acs, 530acs, 540acs, 600acs, 610acs, 620acs, 630acs, 640acs, 650acs, 660acs, 670acs, 680acs, 690acs, 860acs, 870acs, 880acs, 890acs.
DOVER: Dover Laboratory, 53 East McFarlan Street.	500cp, 510cp, 530cp, 570cp, 600c, 660c, 690c.
ELIZABETH: R. L. Van Name, 829 Newark Avenue. (Branch at Staten Island, N. Y.)	040cpa, 300ca, 390ca, 470ca, 490ca, 500cpai, 510cpai, 520ca, 530ca, 540ca, 550ca, 570ca, 590ca, 600ca, 610ca, 62ca, 630ca, 640ca, 650ca, 660ca, 680ca, 690ca, 800cap, 870ca, 890ca.
HOBOKEN: United States Testing Co. (Inc.), 1415 Park Avenue. (Branches at New York; Philadelphia; Chicago; Paterson, N. J.; Greensboro, N. C.; Providence; Woonsocket, R. I.; Brooklyn; Bridgeport, Pa.; Reading, Pa.; Lowell, Mass.; Fitchburg, Mass.)	040cpa, 060cpa, 070cpa, 140cp, 150ca, 160c, 170c, 200cpa, 210cpa, 230cpa, 280cpa, 300cpahl, 310cpail, 320cpahl, 330acphli, 340cpahl, 360cpahl, 370cpahl, 390cpahl, 470cpa, 480cpa, 490cpa, 500cpa, 510cpa, 530cpa, 540cpa, 570cpa, 800c, 820c, 830c, 840ca, 870cpa, 880cpa, 890cpa.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NEW JERSEY—Continued

Name and address of laboratories	Commodities and nature of tests ¹
JERSEY CITY: The Analytical Laboratory, 921 Bergen Avenue.	010ct, 020abcit, 030abet, 040abet, 060c, 070t, 090bct, 100cb, 110c, 120bt, 130bt, 140c, 150bte, 160bte, 170abet, 200c, 230c, 260c, 280c, 310cpah, 320cpa, 330cpah, 340cpah, 360cpah, 370cpah, 390cpah, 470cpa, 480cpa, 490cpa, 510c, 530c, 540c, 550cpa, 570c, 590c, 630c, 640c, 650c, 680c, 800c, 810cbt, 820c, 830c, 840c, 870c, 880cb, 890c, 950ap, 970c, 990abapt. 010abet, 020abet, 800abet, 810abet, 820abet, 870abc, 890abet.
MERCHANTVILLE: A. C. Herting, Browning Road and Elvena Avenue.	
NEWARK: The Blair Laboratory, 279 Mulberry Street— The Clinical Laboratory, 33 Lincoln Park— Gray Industrial Laboratories, 961 Frelinghuysen Avenue. G. Byron Hogaboom, Jr., 352 Mulberry Street. Howard Inspecting and Testing Laboratory, 234 Mount Prospect Avenue.	040c, 050cp, 060cp, 070cp, 140c, 230c. 020abc, 090abc, 170abc, 880abc. 040c, 090c, 140c, 170c, 600cx, 610x, 630cx, 640cx, 650cx, 680cx, 690cx, 800c, 820c, 830c, 840c, 850c, 870c, 890c. 660acim.
PATERSON: United States Testing Co., 220 Ellison Street.	500cp, 510cp.
SOUTH ORANGE: Philip O. Gravelle, 114 Prospect Street.	See Hoboken, N. J.
	020a, 040a, 060a, 070a, 090a, 100a, 140a, 150a, 160a, 170a, 200a, 210a, 220a, 230a, 260a, 280a, 290a, 300a, 310a, 320a, 330a, 340a, 360a, 370a, 390a, 470a, 480a, 490a, 500a, 510a, 520a, 530a, 540a, 550a, 570a, 590a, 600a, 610a, 620a, 630a, 640a, 650a, 660a, 680a, 690a, 800a, 810a, 840a, 850a, 870a, 880a, 890a.

NEW MEXICO

LAS CRUCES: New Mexico State Highway Department, Testing Laboratory.	020abc, 090c, 100c, 110c, 120c, 160c, 240b, 250b, 410ap, 500chlp, 510p, 530p, 570c, 590c, 600cp, 630c, 640c, 650c, 680c, 700mp, 710e, 760p, 790mep, 800c, 850c, 880c, 890c.
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NEW YORK

ALBANY: Touceda Chemical and Physical Laboratories, 943 Broadway.	010c, 020c, 040c, 220c, 300cm, 470cm, 500c, 530c, 540c, 570c, 590c, 600cm, 620cm, 630cm, 640cm, 650cm, 680cm, 690cm, 820c, 840c, 850c, 870c, 880c, 890c.
BROOKLYN: Foster D. Snell (Inc.), 305 Washington Street.	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.
United States Testing Co., 43 Morgan Avenue.	See Hoboken, N. J.
BUFFALO: Buffalo Testing Laboratories (Inc.), 1112 Gerrans Building. (See also Lucius Pitkin (Inc.), N. Y. C.)	010c, 020c, 040cp, 100c, 110c, 140cp, 150c, 160c, 170c, 200cp, 220c, 260c, 500cpa, 510cpa, 520cpa, 530cpa, 540cpa, 550cpa, 560cpa, 570cpa, 590cpa, 600cpa, 610cpa, 620cpa, 630cpa, 640cpa, 650cpa, 660cpa, 670cpa, 680cpa, 690cpa, 800c, 810c, 820c, 830c, 840cpa, 850c, 870c, 890c.
The A. W. Hoppenstedt Laboratory (Inc.), 52 West Chippewa Street. Chas. C. Kavin Co., 110 Pearl Street— Pittsburgh Testing Laboratory, 731 Ellicott Square.	040c, 050cp, 060cp, 140c, 230c, 500c, 890c. See Chicago. See Pittsburgh, Pa.
LONG ISLAND CITY: Radio Engineering Laboratories (Inc.), 100 Wilbur Avenue. St. John X-Ray Service (Inc.), 30-20 Thomson Avenue.	710ips (radio). 040x, 050x, 060x, 100x, 140x, 170x, 200x, 210x, 220x, 230x, 240x, 260x, 280x, 300x, 310x, 320x, 330x, 340x, 360x, 370x, 390x, 400x, 410x, 420x, 430x, 480x, 500x, 510x, 520x, 530x, 540x, 550x, 560x, 570x, 590x, 600x, 610x, 620x, 630x, 640x, 650x, 660x, 670x, 680x, 690x, 700x, 710x, 720x, 730x, 740x, 750x, 760x, 770x, 780x, 790x, 800x, 810x, 820x, 830x, 840x, 850x, 860x, 870x, 880x, 890x, 910x, 920x, 940x, 970x.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NEW YORK—Continued

Name and address of laboratories	Commodities and nature of tests ¹
NEW YORK CITY:	
Jerome Alexander, 50 East Forty-first Street.	040cap, 140cap, 170cap, 210cap, 220cap, 280cap, 290cap, 390cap, 490cap, 530cap, 550cap, 590cap, 690cap, 780cap, 790cap, 800cap, 870cap, 880cap, 890cap, 910cap, 990cap.
John H. Banks Laboratories (Inc.), 26 John Street.	600c, 610c, 620c, 630c, 640c, 650c, 660c, 670c, 680c, 690c, 840c.
Bendiner & Schlesinger Laboratory, 3d Avenue & Tenth Street.	010cbtap, 020cbtap, 030cbtap, 040ctap, 090cbatp, 100catp, 110catp, 140cap, 150catp, 160catp, 170ct, 200ca, 210c, 220ca, 230c, 240cap, 250cap, 260c, 280cap, 290catp, 500c, 510c, 530c, 540c, 570c, 590c, 630c, 640c, 650c, 680c, 690c, 800c, 810cb, 820c, 830c, 840c, 850c, 870cb, 880cb, 890c.
Better Fabrics Testing Bureau (Inc.), 225 West Thirty-fourth Street.	060cpa, 070cspa, 200aips, 230c, 280c, 300cpabs, 310cpabs, 320cpabs, 330cpabs, 340cpabs, 360acpbs, 370cpabs, 400cpa, 470cpa, 490cpa, 900pcas.
Bull and Roberts, 117 Liberty Street.----- James Chittick, 45 East Seventeenth Street.	020bc, 500cp, 700cis, 720cps, 880cbips.
Container Testing Laboratories (Inc.), 45 East Twenty-second Street.	070a, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa.
Cox and Fuller, 320 Broadway.-----	300ps (gummed tapes), 420ps (boxes), 470p, 490p, 950ps.
The Dorr Company (Inc.), 247 Park Avenue.	300acp, 310acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acp, 490acp, 770ips.
Ekroth Laboratories (Inc.), 405 Lexington Avenue.	500ac, 600ac, 830ac, 840ac, 850ac, 890ac.
Electrical Testing Laboratories, 80th Street and East End Avenue.	000best, 010abcist, 020abcist, 030abcist, 040abcipst, 060abcp, 070abcpst, 090abcipst, 100abcipst, 110abcipst, 120abcipst, 130abcipst, 140abcipst, 150abcipst, 160abcipst, 170abcipst, 200abcipst, 210abcipst, 220abcipst, 230abcipst, 240abcipst, 260abcipst, 280abcipst, 290abcipst, 300abcis, 310abcist, 320abcis, 330abcist, 340abcist, 360abcist, 370abcist, 390abcist, 400abcs, 410abcis, 420abcis, 430s, 470abest, 480acs, 490abchipst, 500acs, 510acis, 520bcis, 530achips, 540achps, 550acps, 560acps, 570achps, 590abchipst, 600acs, 610acs, 620acs, 630acs, 640acs, 650acs, 660acs, 670acs, 680acs, 690achipst, 800abest, 810abest, 820abepst, 830abcpst, 840abchipst, 850abcs, 870abcipst, 880abchipst, 890abchipst, 910cips, 930acips, 950abchipst, 970cipst, 980abcp, 990abchiplt.
Food Research Laboratories (Inc.), 114 East Thirty-second Street.	020c, 040c, 060acp, 110c, 130ac, 140cp, 160c, 170c, 200ceipsx, 210ep, 260c, 290cps, 300acps, 310cps, 320acps, 330acps, 360acps, 370acps, 390acps, 400ips, 470acps, 480acps, 490acps, 500chpse, 520acehips, 530acehips, 540acephs, 550acephs, 600aceimpsx, 600acipsx, 620cmps, 630acempsx, 640ceimps, 670eips, 680acmpx, 690cmps, 710acehipsx, 790acehipsx, 800cpe, 810c, 820c, 830c, 840achips, 870c, 880c, 890c, 910eps, 930acips, 990acehips.
Fuel Engineering Company of New York, 116 East Eighteenth Street.	000abet, 010abet, 020abet, 030abet, 040abet, 090abet, 100abet, 110abet, 120abet, 130abet, 140abet, 150abet, 160abet, 170abet, 220abet, 260abet, 290abet, 810abet, 870abet, 880abet, 890abet.
Gulick-Henderson Co., 19 West Forty-fourth Street.	500cp (coal, petroleum).
Hochstadter Laboratories (Inc.), 245 West Thirty-first Street.	See Pittsburgh.
The Hospital Supply Company and Watters Laboratories, 155 East Twenty-third Street.	See Stillman and Van Siclen, below.
Robert W. Hunt Co., Engineers, 53 Park Place.	610p (aseptic steel furniture), 910p (sterilizers, autoclaves, water stills, and hospital furniture).
Emil F. Johnson, 133 Front Street.-----	See Chicago.
Johnson & Salisbury (Inc.), 254 West Thirty-first Street.	470ap (wood pulp and paper).
Knight & Clarke, 50 East Forty-first Street.	010abei, 090bcip (glue, gelatin), 100bc, 130bi, 150c, 160cip, 210ci, 280aps, 470cp, 890pi.
K. Hv. Knudsen, 87 Gold Street.-----	040c, 140c, 170c, 210c (turpentine), 840c (shellac), 870c, 880bc (insecticides), 890c, 930c, 970c, 990c.
	470c (pulp).

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NEW YORK—Continued

Name and address of laboratories	Commodities and nature of tests ¹
NEW YORK CITY—Continued. Ledoux & Company, 155 Sixth Avenue-----	140i, 500c, 510ca, 520c, 530cah, 540cah, 550ca, 570ca, 590ca, 600cmhi, 610cm, 620cai, 630cai, 640cai, 650cai, 660ca, 680ca, 690cai, 830cai, 840ca, 850cai, 890ca.
New York Produce Exchange, Bureau of Chemistry, 2 Broadway.	020cp, 040cpa, 100cpa, 110cpa, 130cpa, 140cpa, 150cpa, 160cpa, 170cpa, 210cpa, 220cpa, 240cpa, 280cpa, 810cpa, 820cps, 830cpa, 840cps, 850cps, 870cpa, 880cpa, 890cpa.
The New York Sugar Trade Laboratory (Inc.), 80 South Street. (For members only.)	160ca.
New York Testing Laboratories, 80 Washington Street.	020abct, 040abct, 050abcp, 060abcp, 070abcp, 090abcp, 100abcp, 110abcp, 140abcp, 150abci, 160abci, 170abci, 200ceips, 210ceips, 220cip, 230cips, 240abcp, 260acip, 280acip, 290acip, 300aceips, 310aceips, 320aceips, 330aceips, 340aceips, 360aceips, 370aceips, 390aceips, 400ips, 410ips, 420ips, 430ips, 470aceips, 480ips, 490aceips, 500achips, 510achips, 520cehips, 530achips, 540acips, 550acehips, 560acip, 570aceip, 590aceips, 600acehimp, 610acehimp, 620acehimp, 630acehimp, 640acehimp, 650acehimp, 660acehimp, 670acehimp, 680acehimp, 690acehimp, 700hilmps, 710ehilps, 720ehilps, 730ips, 740ips, 750ips, 760ips, 770ips, 780ips, 790ips, 800acehip, 810acit, 820acit, 830acit, 840acips, 850acips, 860acips, 870abcipst, 880abcipst, 890abcipst, 910eihps, 920ips, 930cips, 940ips, 950chips, 970chips, 980ips, 990cehips.
Pease Laboratories, 39 West Thirty-eighth Street.	010c, 020cb, 040cb, 050c, 060c, 070c, 090c, 100c, 110c, 120capi, 130capi, 140cb, 150c, 160cb, 170cb, 220ct, 230ct, 260ct, 280c, 300cb, 310c, 390c, 500cbt, 570ct, 590ct, 800cbt, 810cbt, 820ct, 830ct, 840ct, 850ct, 870cbt, 880cbt, 890ct.
Lucius Pitkin (Inc.), 47 Fulton Street. (Branch, see Buffalo Testing Laboratories, Buffalo).	020a, 030a, 170a, 470a, 490a, 510ac, 530ac, 540ac, 550ac, 570ac, 590ac, 600achmps, 610achmps, 620achmsp, 630achmsp, 640achmsp, 650achmsp, 660achmsp, 670cm, 680achmsp, 690achmsp, 700cimps, 810a, 820ac, 830ac, 840ac, 850ac, 870a, 880a, 890ac, 930acp, 950acp, 970ac.
Pittsburgh Testing Laboratory, 82 Washington Street.	See Pittsburgh.
W. S. Purdy Company (Inc.), 128 Water Street.	040cp, 140achi, 210aci, 500cps, 530p, 790l, 800chi, 840acpi, 870chi.
Schwarz Laboratories (Inc.), 202 East Forty-fourth Street.	020bc, 030cb, 040cpa, 100ca, 120c, 130ca, 140c, 150abci, 160ac, 170abci, 220c, 280c, 290cab, 790is (breweries), 810c, 870c, 880c.
Seil, Putt & Rusby (Inc.), 16 East Thirty-fourth Street.	030ac, 040c, 120c, 130ac, 140c, 150ac, 160c, 170c, 210ac, 220acit, 260c, 280ac, 800c, 810acit, 2 c, 870acit.
Silk Grading & Testing Laboratories, 381 Fourth Avenue.	300acips, 310acips, 360acips, 370acips, 390acips, 77Cpsil, 910a.
Stillman & Van Siclen (Inc.), 254 West Thirty-first Street.	020chi, 040cbi, 100c, 130ci, 140c, 150c, 160c, 170bei, 200cp, 210cp, 230c, 240c, 260c, 280c, 300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 500cip, 510cip, 530cip, 540cip, 570cip, 800cips, 810csi, 820csi, 830csi, 840cips, 870cips, 880cips, 890cips.
Stillwell & Gladding (Inc.), 130 Cedar Street.	010c, 020c, 030c, 040cap, 110c, 140cap, 150c, 160c, 170c, 200c, 210c, 220cpa, 260c, 280ca, 290c, 470ca, 500cp, 510c, 520c, 530c, 540c, 570c, 590c, 600c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810ca, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
Stillwell Laboratories (Inc.), The, 76½ Pine Street.	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.
United States Testing Co., 1450 Broadway-- Walker & Whyte (Inc.), 409 Pearl Street---	See Hoboken. 510ci, 520ci, 530ci, 550ci, 570ci, 590ci, 620ci, 630cim, 640cim, 650cim, 660ci, 680c, 690ci.
Weiss & Downs (Inc.), 50 East Forty-first Street.	210cp, 290cp, 340acp, 390acp, 470acp, 500acips, 780cip, 790cip, 800abchips, 820acip, 830acip, 840acp, 850acip, 880abcp, 890acip, 990acip.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

NEW YORK—Continued

Name and address of laboratories	Commodities and nature of tests ¹
NEW YORK CITY—Continued. Adolph J. Winkler, 40 Worth Street-----	040c, 230c, 280ac, 300acp, 310acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acp, 870c.
ROCHESTER: National Testing Laboratories (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, 870c, 880c, 890c.
STATEN ISLAND: R. L. Van Name, 72 Van Name Avenue.	See Elizabeth, N. J.
WATERTOWN: F. M. Williams, 172 Stone Street--	470c (wood pulp).

NORTH CAROLINA

GREENSBORO: United States Testing Co., 255 North Greene Street.	See Hoboken, N. J.
WILMINGTON: Law & Co. (Inc.), Trust Building. (Branches at Atlanta, Cordele, Ga.)	010c, 020c, 030c, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 210c, 220c, 290c, 500c, 530c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 990c.

OHIO

AKRON: V. L. Smithers (Inc.), 2706 Central Tower.	200acp, 210acp, 300p, 710acpe (storage batteries).
CINCINNATI: F. C. Broeman & Co., NW. cor. Third & Walnut Streets.	010c, 020c, 030c, 040c, 060c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 260c, 280c, 290c, 300c, 330c, 340c, 390c, 400c, 470c, 490c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 600c, 630c, 640c, 650c, 680c, 690c, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
The Consulting Co., 2801 Union Central Life Building.	200cps, 230cps, 840cps.
Chas. C. Kavin Co., 222 West Fourth Street.	See Chicago.
Langdon-Meyer Laboratories, 519 Main Street.	010bet, 020bet, 030bet, 090bet, 100bet, 110bet, 140bet, 150bet, 160bet, 170bet, 220bet, 260bet, 280bet, 290bet, 810bet, 870bet.
H. C. Nutting Co., 4120 Davis Lane. (Branch at Miami, Fla.)	100c, 170c, 320c, 400acpi, 410acpi, 470c, 500cpi, 510cpi, 530cpai, 540cp, 570cp, 600cpai, 610cpai, 620cp, 630s, 640cp, 650cp, 700si, 710si, 720si, 730si, 740si, 750si, 760si, 770si, 780si, 790si, 800cp, 820cp, 830cp, 840cp, 850cp, 870cp, 880c, 890c.
The Louis G. Robinson Laboratories, 219 McFarland Street.	040abcp, 100c, 300p, 400p, 500achip, 510acp, 520acp, 530acp, 540acp, 550acp, 570acp, 600acimps, 630acimps, 640acimps, 650acimps, 680acimps, 690acimps, 800acp, 820ac.
CLEVELAND: American Gas Association Testing Laboratories, 1032 Sixty-second Street. (Branch at Los Angeles.)	990acehimpst (gas appliances).
Cremer-Case Co., 2800 Washington Street, N. W.	500c, 600c, 610c.
Crowell & Murray (Inc.), 2830 Washington Avenue.	600cpm, 610cpm, 620cpm, 630c, 640c, 650c, 660c, 690c, 840c.
The James H. Herron Co., 1360 West Third Street.	500cip, 510cip, 530cip, 600cmp, 610cmp, 620c, 630cmp, 640cmp, 650cmp, 680c, 690cmp, 700i, 710i, 820c, 840c, 850c, 880c.
Pittsburgh Testing Laboratory, 1404 East Ninth Street.	See Pittsburgh.
Textor Chemical Laboratories, 1165 West Sixth Street.	010c, 020c, 040cp, 110c, 120c, 140cp, 150c, 160c, 170c, 500cp, 510c, 520c, 530c, 540c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
COLUMBUS: Willard Richardson, Schultz Building.	530chp.
DAYTON: Bowser-Morner Testing Laboratories, 141 Bruen Street.	020cb, 100c, 110c, 160c, 170c, 200cp, 290c, 300acp, 310acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acp, 470ac, 490ac, 500chips, 510cips, 530chp, 570c, 590cp, 600cips, 610cips, 620cips, 630cips, 640cips, 650cips, 660ch, 680cp, 690cips, 790ps, 800cips, 850c, 860cs, 870c, 880cs, 890cis, 930cps, 950ps, 990cips.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

OHIO—Continued

Name and address of laboratories	Commodities and nature of tests ¹
LANCASTER: The Sharp-Schurtz Co., 301 Lincoln Avenue.	510ac, 520acp, 530c, 550c, 590c.
TOLEDO: Commercial Testing and Engineering Co.	See Chicago, Ill.
YOUNGSTOWN: C. W. Danforth Co., 2412 South Avenue.	500c, 510c, 530c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 840c.

OKLAHOMA

OKLAHOMA CITY: Oklahoma Testing Laboratories, 1145 NW. Second Street.	040cp, 140cp, 170c, 400i, 410i, 500cp, 510cpi, 530c, 540c, 550c, 570c, 590c, 600cpi, 610cpi, 620c, 630c, 640cp, 650c, 660c, 680c, 690cp, 800cp, 810c, 820c, 830c, 840c, 850c, 870c, 880ci, 890c.
PITCHER: The Bruce Williams Laboratories, 109 South Cornell Avenue.	See Joplin, Mo.

OREGON

PORTLAND: Bureau of Health Laboratories, City Hall— Central Inspection Bureau, Bedell Building— Robert W. Hunt Co., Engineers, 720 Corbett Building. E. W. Lazell, 537 Railway Exchange Building.	010bei, 020abci, 030bpi (oysters). 130acp, 140acp, 400ap, 410api, 420ip, 600cpi, 630cpi, 640cpi, 700ip. See Chicago.
SALEM: Oregon State Highway Commission Laboratory, Agricultural Building.	020c, 040c, 100c, 110c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 280c, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 400cpa, 410cpa, 420cpa, 470cpa, 490cpa, 500cpa, 510cpa, 520cpa, 530cpa, 540cpa, 550cpa, 560cpa, 570cpa, 590cpa, 600cpa, 610cpa, 620cpa, 630cpa, 640cpa, 650cpa, 660cpa, 680cpa, 690cpa, 800cpa, 810cpa, 820cpa, 830cpa, 840cpa, 850cpa, 870cpa, 890cpa. 400p, 500cp, 510p, 530p, 590cp, 600cp, 640cp, 690cp, 800cp, 840cp, 890cp.

PENNSYLVANIA

BRIDGEPORT: United States Testing Co.----- CRESSON: Warner Laboratories, 617 First Street. EAST STROUDSBURG: The Silk Laboratories, Brown Street. ERIE: The Erie Laboratories, 1519 French Street. HARRISBURG: Andrew S. McCreath & Son, 236 Liberty Street. MALVERN: J. Bishop & Co., Platinum Works--- PHILADELPHIA: American Water Softener Co., S. E. cor. Lehigh Avenue and Fourth Street. Bell & Beltz (Inc.), 3340 North Broad Street. Booth, Garrett & Blair, 404 Locust Street--- Brewer and Gardner, S. E. cor. Eighteenth and Cherry Streets. Joseph S. Carlitz, 339 South Thirteenth Street. W. B. Coleman & Co., 1920 West Indiana Avenue.	See Hoboken, N. J. 500c, 510c, 530ch, 540c, 570c, 590c, 640c, 650c, 680c, 690c, 820c, 830c, 840c, 850c, 880c, 890c. 370pa. 010c, 020cpb, 060cpb, 100ca, 120ca, 140cp, 160cp, 170cpb, 230c, 500cph, 510cp, 530c, 540c, 600cp, 610cp, 620c, 630c, 640cp, 650c, 680c, 690c, 800cp. 500ch, 510c, 530c, 600c, 620c, 690c. 660c. 880c. 020bc, 090c, 100c, 110c, 140cp, 160bc, 170bc, 850c, 880abc. 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c. 500c, 530c, 690c (solder), 800c. 010bc, 020bc, 030c, 040c, 060c, 070c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170cb, 200c, 220c, 230c, 260c, 280c, 290c, 300c, 340c, 370c, 390c, 490c, 500c, 510c, 530c, 540c, 570c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 900c, 970c. 500c, 510cp, 530cp, 540c, 570c, 590c, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 700p, 840c, 850c, 880cp.
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GEOGRAPHICAL LISTING OF LABORATORIES—Continued

PENNSYLVANIA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
PHILADELPHIA—Continued.	
E. L. Conwell & Co., 2024 Arch Street. (Branch at Baltimore, Md.)	040cp, 060cp, 140cp, 170c, 200cp, 260ac, 290ac, 390acp, 400cip, 410ip, 430p, 470acp, 490acp, 500cip, 510cip, 520cip, 530cip, 540cip, 550cp, 570c, 590cp, 600cip, 610cip, 620cip, 630cp, 640cp, 650cp, 660ac, 680cp, 690cip, 800cip, 810cip, 820cip, 830cip, 840cip, 850cip, 860cip, 870cip, 880cip, 890cip, 990acip.
George C. Davis, 636 Race Street.....	500c, 510c, 530c, 540c, 550c, 570,c 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c.
Frank R. Gunn Co., Ontario & Brabant Streets.	020cp, 040cp, 090c, 100cpa, 110c, 140cp, 200cp, 210cp, 280cp, 300cpa, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cpa, 500cp, 510c, 530c, 570cp, 600c, 620c, 640c, 680c, 690c, 800cp, 820c, 840cp, 850cp, 870c, 880c, 890c.
Hamlin and Morrison, 216 South Second Street. (Branches at Baltimore, Md., Portland, Maine, and South Haven, Mich.)	040c, 090c, 110c, 140c, 400c (wood pulp), 570c, 850c, 870c.
Joseph W. E. Harrisson, 214 South Twelfth 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, 390c, 500c, 830c, 870c.
Robert W. Hunt Co., Engineers, 728 Commercial Trust Building.	<i>See Chicago.</i>
Industrial By Products and Research Corporation, Gimbel Building, Eighth and Market Streets.	020abc, 060ps, 150abep, 160abep, 170abep, 220abep, 230cs, 280acp, 290acp, 300abchips, 310abchips, 320abchips, 330abchips, 340abchips, 360abchips, 370-abchips, 390abchips, 470acps, 490acps, 830c, 840cp, 870abep, 890abep, 990s.
Horace C. Knerr, 1116 West Montgomery Avenue. (<i>See also Metallurgical Laboratories, Inc.</i>)	600pm, 610pm, 630pm, 640pm, 690pm.
LaWall and Harrisson, 214 South Twelfth Street.	000abci, 010abci, 020abci, 040abci, 050bet, 060c, 070bc, 090bc, 100abcipt, 110abcipt, 120abcipt, 130abcipt, 140abcipt, 150abcipt, 160abcipt, 170abcipt, 200abc, 210abc, 220abc, 230abc, 240abc, 250abc, 260abc, 280abc, 290abc, 300abcp, 310abcp, 320abcp, 330abcp, 340abcp, 360abcp, 370abcp, 390abcp, 500acp, 510apc, 520acp, 530acp, 540acp, 550acp, 560acp, 570acp, 590acp, 800abcipst, 810abcipst, 820abcipst, 830-abcipst, 840abcipst, 850abcipst, 860abcipst, 870-abcipst, 880abcipst, 890abcipst, 930acips, 950acips, 970acips.
Metallurgical Laboratories (Inc.), 1116 West Montgomery Avenue.	600chimp, 610chimp, 630chimp, 640chimp, 690chimp.
Tinius Olsen Testing Machine Co., 500 North Twelfth Street.	390p, 410p, 470p, 510p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 690p.
Pittsburgh Testing Laboratory, 238 Cherry Street.	<i>See Pittsburgh.</i>
Rubicon Co., 29 North Sixth Street.....	600e, 640e, 710e, 910s.
Samuel P. Sadtler & Son (Inc.), 210 South Thirteenth Street.	020abc, 040ac, 050cb, 060c, 100c, 110c, 120c, 140ca, 150c, 160c, 170c, 200c, 210c, 220c, 230c, 260c, 280cp, 290c, 300cp, 310cp, 320cp, 330cp, 340c, 360cp, 370cp, 390cp, 470cp, 490cp, 500cp, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 800cp, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Smith, Rudy and Co., 20 North Third Street.	500c, 510c, 530c, 600cm, 620c, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 840cm.
United States Testing Co., 601 West Susquehanna Avenue.	<i>See Hoboken.</i>
PITTSBURGH:	
Dairy Products Laboratory, 119 Federal Street, N. S.	020bc.
Gulick-Henderson Company, 524 Fourth Avenue. (Branches at New York; Chicago.)	000c, 100c, 110c, 140c, 170c, 400i, 490i, 500c, 510cp, 520c, 530c, 540c, 550c, 590c, 600cpi, 610cpi, 620c, 630c, 640cp, 650c, 660c, 680c, 690c, 700p, 720i, 740i, 750i, 760i, 780i, 840c, 850c, 870c, 880c.
Robert W. Hunt Co., Engineers, Professional Building.	<i>See Chicago.</i>
National Canners' Laboratory, 711 Pennsylvania Avenue.	010abc, 020abc, 030abc, 040abc, 090abc, 100abc, 120abc, 130abc, 140abc, 150abc, 160abc, 170abc, 260b, 290abc, 570c, 950s.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

PENNSYLVANIA—Continued

Name and address of laboratories	Commodities and nature of tests ¹
PITTSBURGH—Continued. Pittsburgh Testing Laboratory, Stevenson Street at Locust. (Branches at Buffalo, New York City, Philadelphia, Birmingham, Dallas, Chicago, Detroit, Cleveland, Houston, Atlanta, New Orleans, St. Louis.)	020c, 040cl, 060ps, 090c, 110c, 140cl, 150c, 160c, 170c, 200cps, 280cp, 300pcs, 310ps, 320ps, 330ps, 340p, 360cps, 370ps, 390pc, 400ps, 410ps, 420ps, 430ps, 470p, 480p, 490p, 500cps, 510cpsa, 520cp, 530cps, 540cps, 550cp, 560cp, 570cpl, 590cp, 600cpm, 610cpms, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 670cpms, 680cpm, 690cpms, 700ps, 710ps, 720ps, 730ps, 740ps, 750ps, 760ps, 770ps, 780ps, 790ps, 800cps, 820c, 830c, 840cs, 850c, 860c, 870cs, 880c, 890c, 910cps, 920p, 930cps, 940cp, 950ps, 970cps, 980ps, 990cp. <i>See Hoboken.</i>
READING: United States Testing Co., 424 North Ninth Street.	
WAYNESBORO: The Wayne Laboratories, 17 East Main Street.	010cb, 020cb, 040cbp, 150cpa, 160cpa, 170cp, 200c, 210c, 220c, 230c, 260c, 250c, 290cp, 370cp, 470cps, 490cps, 500cps, 510cp, 520cp, 530cph, 540cp, 550cp, 560cpa, 570cp, 590cp, 600cpms, 610cpms, 620cpms, 630cpms, 640cpms, 650cpms, 660cpms, 680cpms, 690cpms, 800cp, 810c, 820cp, 830cp, 840acps, 850c, 860c, 870cp, 880cps, 890cp.

RHODE ISLAND

NEWPORT: The Eppley Laboratory, 12 Sheffield Avenue.	710s (standard cells).
PROVIDENCE: United States Testing Co., 101 Blackstone Street.	<i>See Hoboken.</i>
WOONSOCKET: United States Testing Co., 85 Fairmount Street.	<i>See Hoboken.</i>

SOUTH CAROLINA

CHARLESTON: Parker Laboratory, 40 Broad Street.	010ct, 040ct, 100c, 140pc, 170c, 400i, 500cpi, 510cpi, 520cp, 570c, 590c, 600c, 640c, 800pc, 810c, 840c, 850acp, 870c, 880bci, 890c. <i>See Mobile, Ala.</i>
A. W. Williams Inspection Co., P. O. Box 458.	
COLUMBIA: Charles W. Rice and Co., 1110 Taylor Street.	010c, 020cb, 030c, 040c, 100c, 110c, 120c, 130c, 140c, 170bc, 530c, 850c.

TENNESSEE

CHATTANOOGA: Emerson P. Poste, 99 Market Street.	010c, 020c, 100c, 500c, 510c, 520c, 530cp, 590c, 700cmp, 610cmp, 620c, 640c, 690c, 810c, 830c, 890c.
MEMPHIS: Barrow-Agee Laboratories, 60 North Third Street. (Branches at Shreveport, La.; Jackson, Miss.; Leland, Miss.; Cairo, Ill.)	020abc, 040c, 100ac, 110ac, 140ac, 160c, 170bc, 220c, 240acp, 290cp, 400ip, 410ip, 500cp, 510cip, 530cip, 570c, 590c, 600cp, 610cp, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840cp, 850c, 870c, 880c, 890c.

TEXAS

DALLAS: The Dallas Laboratories, 2411 South Harwood Street.	020cpab, 040cpab, 100cp, 110cp, 170cpab, 300cp, 390cp, 490cp, 500cp, 640cp, 650cp, 820cp, 830cp, 840cp, 850cp, 870cp, 880cpab. <i>See Pittsburgh.</i>
Pittsburgh Testing Laboratory, 1112 Commerce Street.	
Southwestern Laboratories, 1105½ Main Street.	<i>See Fort Worth.</i>
EL PASO: George W. Cameron, 205 San Francisco Street.	500cp, 530cp, 570c, 590c, 600c, 620c, 630c, 640c, 650c, 680c, 690c,
El Paso Testing Laboratories, P. O. Box 1565.	010ci, 020aci, 040acpi, 090acpi, 100ac, 110ac, 140acpi, 150ac, 160ac, 170ac, 210acp, 220acp, 230acp, 240acp, 280acp, 290acp, 410p, 500cpi, 510acpi, 530acp, 540acp, 550cp, 570acp, 590acp, 600cp, 610cpi, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 740i, 750i, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.

¹ See pp. 1 and 2 for symbolc references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

TEXAS—Continued

Name and address of laboratories	Commodities and nature of tests ¹
FORT WORTH: Southwestern Laboratories, 828½ Monroe Street. (Branches at Dallas, Houston, San Antonio.)	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 Paquin, 305½ Twenty-second Street.	000b, 010bc, 020bc, 030bc, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 150bc, 160c, 170bc, 210c, 220c, 300acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acp, 470cp 490c, (wood pulp), 500cp, 510cp, 520cp, 530cp, 540cp, 570cp, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 800c, 820c, 840c, 850c, 870c, 880c.
HOUSTON: Houston Laboratories, 1206½ Preston Avenue.	020c, 040c, 100c, 110c, 140cp, 150c, 160c, 500c, 510c, 530cp, 570c, 590c, 600c, 630c, 640c, 650c, 680c, 690c, 820c, 840cp, 850c, 870c, 890c. <i>See</i> Pittsburgh.
Pittsburgh Testing Laboratory, Merchants & Manufacturers Building.	<i>See</i> New Orleans.
Shilstone Testing Laboratory, 301 M & M Building.	<i>See</i> Fort Worth.
Southwestern Laboratories, 1206½ Preston Avenue.	<i>See</i> Fort Worth.
SAN ANTONIO: Southwestern Laboratories, 308½ Navarro Street.	<i>See</i> Fort Worth.

UTAH

SALT LAKE CITY: Alonzo F. Bardwell, 158 Southwest Temple Street.	640c, 650c, 660c, 680c, 690c.
Black and Deason, 165 Southwest Temple Street.	500c, 530c, 570c, 600c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.
Crismom & Nichol, 229 Southwest Temple Street.	500c (coal), 510c, 530c, 570c, 600c, 620c, 630c, 640c, 650c, 660c, 680c, 690c.

VIRGINIA

FORDWICK: Froehling & Robertson (Inc.)-----	<i>See</i> Richmond.
NORFOLK: Froehling & Robertson (Inc.), % Lone Star Cement Co.	<i>See</i> Richmond.
Norfolk Testing Laboratories (Inc.), 288 Bank Street.	010abc, 030abc, 120abc, 810c.
RICHMOND: Froehling and Robertson (Inc.), 814 West Cary Street. (Branches at Norfolk, Fordwick, Va.)	010c, 020cb, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170cb, 210c, 260c, 280c, 290c, 300c, 310c, 320c, 330c, 340c, 360c, 370c, 390c, 400cpi, 410cpi, 470cp, 480cp, 490cp, 500cpih, 510cpi, 520cp, 530cpih, 540cp, 550c, 570cp, 590cp, 600cpim, 610cpim, 620cpim, 630cp, 640cpi, 650cp, 660c, 680cp, 690cp, 800cp, 810c, 820c, 830c, 840cp, 850c, 870c, 880cbi, 890c, 910cp, 930cp, 990cpi.
Robb and Moody, (Virginia Testing Laboratory), 5 North Sixth Street.	010c, 020ca, 030c, 040cpa, 050c, 060c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 260c, 280c, 290c, 300cp, 390c, 500cpa, 510cpa, 530cpa, 540cpa, 550ca, 570c, 590cpa, 600cp, 620c, 630c, 640c, 650c, 680c, 690cpa, 800c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 970c.

WASHINGTON

SEATTLE: Falkenburg and Co., 86 Madison Street----	020c, 040c, 100c, 110c, 130ci, 140c, 150c, 160c, 170c, 400i, 500cp, 510cip, 530cip, 540c, 550c, 570c, 590c, 600cip, 610cip, 620cip, 630c, 640cp, 650c, 660c, 680c, 690c, 800cp, 810c, 820c, 830c, 840cp, 850c, 860c, 870c, 880c, 890c.
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¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF LABORATORIES—Continued

WASHINGTON—Continued

Name and address of laboratories	Commodities and nature of tests ¹
SEATTLE—Continued. Geijsbeck Engineering Co., Arctic Building-Lauks Laboratories (Inc.), 911 Western Avenue.	500c, 520c, 530cl, 590c, 700i, 780i, 790i. 010ciba, 020cba, 030ciba, 040cip, 050cia, 060cia, 070ia, 090iacpb, 100ciabp, 110ciab, 120ciab, 130ciap, 140ciap, 150aci, 160acib, 170acib, 200acip, 210acip, 220aci, 230aci, 240aci, 250ai, 260aci, 280acips, 290acip, 300acip, 310acip, 320acip, 330acip, 340acip, 360acip, 370acip, 390acip, 400ip, 410ip, 420ip, 430ip, 470acip, 480i, 490acip, 500acip, 510acip, 520acip, 530acip, 540acip, 550acip, 560ac, 570acip, 590acip, 600acipms, 610acipm, 620acipm, 630acim, 640acim, 650acim, 660acim, 670c, 680acim, 690acimp, 700sci, 710acp, 720is, 730is, 740is, 750is, 760is, 770is, 780is, 790is, 800cap, 810ca, 820ca, 830acimpt, 840acip, 850acib, 860aci, 870acib, 880acib, 890acibmp, 910acips, 940aci, 950acips, 970acips, 980aci, 990acipshebm.
Matson, Rogers, and Markham (Pacific Coast Testing Laboratory), 2264 First Street North.	040c, 100c, 110c, 140c, 150c, 160ca, 170c, 200c, 210ca, 220c, 230c, 260c, 280c, 400i, 410i, 420i, 470cp, 490cp, 500cai, 510cai, 520ci, 530ca, 540aci, 550ca, 570ca, 590ca, 600acim, 610imp, 620cimp, 630cam, 640camp, 650cam, 660cam, 680cam, 690camp, 700im, 730iam, 740iam, 750iam, 760iam, 780iam, 790iam, 800ci, 820ci, 830ci, 840cai, 850c, 860c, 870c, 880ci, 890ci, 950pi, 970c.
Northwest Testing Laboratories, Second Avenue and James Street.	010ac, 020ac, 030ac, 040acp, 090acp, 100ac, 110ac, 120c, 130c, 140cpa, 150ac, 160ac, 170ac, 210c, 220c, 280cp, 290c, 300cp, 310cp, 320cp, 360cp, 370cp, 390cp, 400epi, 410epi, 420cpi, 470cpa, 490cpa, 500cp, 510cpa, 520c, 530cpa, 540cpa, 550ca, 570c, 590c, 600cpaim, 610cpaim, 620cpaim, 630cpaim, 640cpaim, 650cpaim, 660c, 680cpaim, 690cpaim, 700i, 710is, 740i, 750i, 780i, 800cap, 820c, 830c, 840cap, 850c, 860c, 870c, 880c, 890c, 910i, 950i, 970i, 990i.
SPOKANE: The C. M. Fassett Co. (Inc.), 207 North Wall Street.	400api, 410acip, 500acip, 510acip, 530c, 600cp, 610acp, 630m, 640m, 650m, 690m, 800acpi, 840acp, 850c, 870cp, 880cs.
TACOMA: Bennetts' Chemical Laboratory, 1131 Market Street.	040ac, 110c, 140c, 170c, 200cp, 500c, 510epi, 530cp, 570c, 600cp, 610cp, 620cpm, 630cpm, 640cm, 650cm, 680cm, 690cm, 800c, 850c, 890c.

WEST VIRGINIA

CHARLESTON: Commercial Testing and Engineering Co.	<i>See Chicago.</i>
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WISCONSIN

MADISON: State Highway Commission of Wisconsin, State Office Building.	140ac, 400i, 500cp, 510cp, 600cp, 800cp, 840c.
MILWAUKEE: The Orthmann Laboratories (Inc.), 647 West Virginia Street.	020bc, 040acp, 050abcp, 060abcp, 070abcp, 090abcp, 140acp, 160bc, 170bc, 210cp, 230abcp, 280abcp, 320ap, 330ap, 340ap, 360acp, 390ap, 470ap, 500cp, 540acp, 570acp, 590ac, 800c, 820c, 830c, 840ac, 850ac, 870ac, 880bc, 890bc.
Sommer Chemical Laboratories (Inc.), 152 West Wisconsin Avenue.	010c, 020c, 030c, 040c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 500c, 510c, 530c, 540c, 550c, 570c, 590c, 600c, 610c, 620c, 640c, 650c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.

WYOMING

CHEYENNE: Wyoming State Highway Department, Capitol Building.	500cp, 510cp, 530p, 600p, 690c, 800cs, 840cs.
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¹ See pp. 1 and 2 for symbolic references.

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 work is being done for State and municipal agencies and for public institutions, including the colleges themselves. However, there is a very wide diversity in the methods of conducting investigations with special reference to the responsibility of the colleges for the investigations made in their laboratories. At some of the colleges investigations seem to be conducted under the responsibility of the heads of the departments, who make use of the college laboratories for this purpose. At certain other colleges work is carried on for tax-supported agencies seemingly under the responsibility of the college rather than the professors.

It is suggested that persons interested in ascertaining the conditions under which investigations 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-----	000bt, 010i, 020bi, 100c, 110c, 300p,
Agricultural laboratory, M. J. Funchness.	310p, 500ch, 510p, 600cp, 610cp,
Bacteriological laboratory, C. A. Cary.	690c, 700s, 710s, 730s, 760s, 810c,
Chemistry laboratory, C. L. Hare.	820c, 830c, 850c, 870c, 880c, 890c.
Engineering laboratory, Jno. L. Wilmore.	
Physics laboratory, Fred Allison.	
BIRMINGHAM:	
Howard College-----	600pc, 820c, 830c, 850c.
Chemical laboratory, John Xan.	
Physics laboratory, Paul D. Bales.	
UNIVERSITY:	
University of Alabama-----	400p, 410p, 420p, 500p, 510p, 530p,
Ceramic laboratory, T. N. McVay.	540p, 600p, 620m, 630m, 640m, 650m,
Chemical engineering laboratory, S. J. Lloyd.	680m, 690m, 710e.
Civil engineering laboratory, J. O. Smith.	
Electrical engineering laboratory, Fred R. Maxwell, Jr.	
Metallurgical engineering laboratory, Ray L. Farabee.	
Mining engineering laboratory, J. R. Cudworth.	
Physical laboratory, G. J. Davis, Jr.	

ALASKA

COLLEGE:	
Alaska Agricultural College and School of Mines-----	020bc, 100abcs, 110cs, 390acp, 400p,
Agricultural laboratory, George W. Gasser.	410p, 500ach, 510acp, 530ac, 540ac,
Chemical laboratory, W. Bastress.	550ac, 560ac, 570ac, 590ac, 600p,
Civil engineering laboratory, Wm. Elmhirst Duckering.	610p, 620acmp, 630acmp, 640acmp,
Mineralogical testing laboratory, Paul Hopkins.	650acmp, 660acmp, 680acmp,
Mining, metallurgical, and geological laboratory, Ernest N. Patty.	690acmp, 730s, 750s, 850ac, 880c, 890acpt.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

ARIZONA

Location and name of laboratory	Commodities and nature of tests ¹
TUCSON:	
University of Arizona -----	000bct, 010ct, 020epb, 040c, 090c, 100c,
Agricultural chemistry laboratory, W. T. McGeorge.	110c, 120c, 130c, 140c, 160c, 170c,
Chemistry laboratory, Ernest Anderson.	220c, 230c, 260c, 290c, 300ap, 360ap,
Civil engineering laboratory, Frank C. Kelton.	400p, 410p, 500hp, 510hp, 530cp,
Electrical engineering laboratory, James C. Clark.	560p, 600acmp, 610acmp, 620acmp,
Mechanical engineering laboratory, M. L. Thornburg.	630acmp, 640acmp, 650acmp,
Mineralogical laboratory, G. M. Butler.	660acmp, 680acmp, 690acmp, 700ilps,
Mining engineering, metallurgical, and metallographic	710ilps, 720s, 750s, 810c, 850cp, 870cp,
laboratories, T. G. Chapman.	880cp, 890cp.
Petrographic laboratory, M. A. Short.	
Physics laboratory, E. H. Warner.	

ARKANSAS

FAYETTEVILLE:	
University of Arkansas -----	000abc, 010abc, 020abc, 100abc, 110abc,
Agricultural chemistry laboratory, Barnett Sure.	120abc, 130abc, 140abc, 170c, 240ab,
Agricultural engineering laboratory, D. G. Carter.	250abi, 290abi, 300ab, 500chp, 510cp,
Agricultural experiment station, Dan T. Gray.	520c, 530c, 540c, 550e, 570c, 590c,
Animal industry laboratory (unfilled).	600cp, 610cp, 620cp, 630cp, 640cp,
Bacteriology laboratory, Wm. L. Bleecker.	650c, 680cp, 690cp, 700hp, 710ehp,
Botany laboratory, D. M. Moore.	720hp, 730hp, 740p, 780p, 790p,
Chemistry laboratory, Harrison Hale.	800cp, 820cp, 830cp, 850c, 880cp,
Cotton laboratory, O. A. Pope.	890c.
Dairy laboratory, C. O. Jacobson.	
Electrical engineering laboratory, W. B. Stelzner.	
Engineering experiment station, W. N. Gladson.	
Entomology laboratory, W. J. Baerg.	
Field crops laboratory, Martin Nelson.	
Foods laboratory, Miss Zilpha C. Battey.	
Geology laboratory, A. W. Giles.	
Highway materials laboratory, W. R. Spencer.	
Horticulture laboratory, J. R. Cooper.	
Hydraulics and materials laboratories, W. R. Spencer.	
Mechanical laboratory, L. C. Price.	
Physics laboratory, L. B. Ham.	
Plant pathology laboratory, V. H. Young.	
Radio laboratory, L. E. Barton.	
Seeds laboratory, Martin Nelson and John Casey.	
Veterinary science laboratory, Wm. L. Bleecker.	
Zoology laboratory, S. C. Dellinger.	

CALIFORNIA

BERKELEY:	
University of California -----	020cb, 060p, 110cb, 200p, 320p, 330p,
Agricultural chemistry laboratory, C. S. Bisson.	360p, 400p, 410p, 500clp, 510p,
Agricultural engineering laboratory.	530pch, 560i, 570ac, 600hacmp,
Agronomy laboratory, B. A. Madson (Davis).	620acmp, 630cmp, 640cmp, 650cp,
Animal husbandry laboratory, G. H. Hert (Davis).	680cp, 690cp, 700hps, 710eps, 720hps,
Botany laboratory, W. A. Robbins (Davis).	730s, 760ps, 780ps, 790ps.
Citrus experiment station laboratories (Riverside).	
Civil engineering laboratories, R. E. Davis.	
Dairy industry laboratory, C. L. Roadhouse (Davis).	
Electrical engineering laboratory, C. L. Cory.	
Entomology and parasitology laboratories, W. B. Herms.	
Forestry laboratory, Walter Mulford.	
Genetics laboratory, E. B. Babcock.	
Irrigation investigations laboratory, Frank Adams.	
Mechanical engineering laboratory, B. F. Raber.	
Plant nutrition laboratory, D. R. Hoagland.	
Plant pathology laboratory, R. E. Smith.	
Pomology laboratory, W. L. Howard (Davis).	
Poultry Husbandry laboratory.	
Sanitary engineering laboratory, W. F. Langelier.	
Soil technology laboratory, C. F. Shaw.	
Subtropical horticulture laboratory, R. W. Hodgson (Los Angeles).	

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

CALIFORNIA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
BERKELEY—Continued. University of California—Continued. Truck crops laboratory, H. A. Jones (Davis). Veterinary science laboratory, C. M. Haring. Viticulture and fruit products laboratory, F. T. Bioletti. Zoology laboratory, T. I. Storer (Davis). (Davis, Calif., is the location of the university farm and branch of the college of agriculture.)	
LOS ANGELES: Occidental College----- Biological laboratory, Raymond Selle, Hazel Field. Botanical laboratory, Frank J. Smiley. Chemical laboratory, E. E. Chandler. Geological laboratory, Frank J. Smiley. Physical laboratory, Bert Richardson. University of Southern California----- Bacteriology and parasitology laboratories, John F. Kessell. Bacteriology laboratory, C. C. Lindegren. Biochemical laboratory, Harry H. Deuel. Botany laboratory, George Rufus, G. R. Johnstone. Chemistry laboratory, L. D. Roberts, W. W. Scott. Civil engineering laboratory, R. M. Fox. Electrical engineering laboratory, P. S. Biegler. Experimental medicine laboratory, Charles W. Bonyage. Geology laboratory, Thomas Clements, A. J. Tiege. Mechanical engineering laboratory, Thomas T. Eyre. Merchandising laboratory, Ada Collins Holmes. Nutrition laboratory, LeRoy S. Weatherby. Petroleum engineering laboratory, John F. Dodge. Pharmacology laboratory, Clinton H. Thienes. Pharmacy laboratory, Laird J. Stabler. Physics laboratory, Arthur W. Nye. Zoology laboratory, B. M. Harrison.	000ab, 010abct, 020abcp, 030ab, 040acp, 050abi, 060aci, 070abi, 100abct, 110b, 120ab, 130abc, 140ae, 150b, 160abep, 170b, 200e, 240ab, 250ab, 260b, 280ab, 290ab, 300acipb, 310acipb, 320acipb, 330acipb, 340a, 360acip, 370acip, 390acip, 400aip, 410abip, 420b, 430b, 480b, 490b, 500acehp, 510hp, 520aip, 540ap, 550ap, 560ap, 570a, 590ap, 600ehacmp, 610imp, 620- eimp, 630eimp, 640eimp, 650eimp, 680eimp, 690eimp, 700esih, 710ehps, 730es, 750ip, 800acb, 810et, 880b, 910ehps.
MILLS COLLEGE: Mills College----- Chemical laboratory, V. L. Gibbons. Household science laboratory, Carrie C. Dozier.	010ac, 020abc, 030abc, 040abc, 100abc, 110abc, 130abc, 140abc, 150abc, 160- abc, 170abc.
PASADENA: California Institute of Technology----- Electrical engineering laboratory, R. W. Sorensen. Gates chemical laboratory, Arthur A. Noyes. Hydraulics laboratory, R. L. Daugherty. Materials testing laboratory, F. W. Hinrichs, Jr. Mechanical engineering laboratory, R. L. Daugherty. Norman Bridge laboratory of physics, R. A. Millikan.	410p, 500cp, 510p, 520cp, 530p, 550cp, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 700s, 710s, 750s.
STANFORD UNIVERSITY: Stanford University----- Aerodynamics laboratory, A. B. Domonski. Chemical laboratory, R. E. Swain. Civil engineering laboratory, Samuel B. Morris. Electrical engineering laboratory, Ward B. Kindy. Mechanical engineering laboratory, A. B. Domonski. Metallurgical laboratory, T. J. Hoover.	400pi, 410pi, 420pi, 500hilp, 510p, 530p, 590cm, 600pm, 610pm, 620pm, 630- pm, 640pm, 650pm, 680pm, 690pm, 700s, 710sep, 750s, 830c, 890c.
STOCKTON: College of the Pacific----- Chemistry laboratory, A. T. Bowden, J. H. Jonte.	000c, 010c, 020c, 300ac, 500c, 600cm, 800c, 900c.

COLORADO

BOULDER: University of Colorado----- Biology laboratory, Francis Ramaley. Electrical engineering laboratory, F. A. Easton. Electrical standardizing laboratory, C. M. McCormick. Geology laboratory, P. G. Worcester. Materials testing laboratory, W. H. Thoman. Mineralogy and petrography laboratory, R. D. Crawford. Oil laboratory, J. A. Hunter. Organic chemistry laboratory, Paul M. Dean. Physical chemistry laboratory, Frank E. Germann. Sanitary chemistry laboratory, C. F. Poe. Steam laboratory, Chas. Wagner.	000abc, 010abc, 020abc, 040cl, 100abc, 110abc, 120abc, 130abc, 140abcl, 150abc, 160abc, 170abc, 220abc, 290abc, 300ac, 310ac, 320ac, 330ac, 340ac, 360ac, 370ac, 390ac, 410ip, 470ac, 500ch, 510pac, 520c, 530epa, 540ac, 550eac, 570ac, 600eip, 620ac, 630ac, 640c, 650ac, 670cis, 680ac, 700cish, 710eis, 740eis, 750eis, 780eis, 790eis, 800c, 810ac, 820ac, 830ac, 850ac, 870ac, 880abc, 890ac, 910eis.
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¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

COLORADO—Continued

Location and name of laboratory	Commodities and nature of tests ¹
COLORADO SPRINGS:	
Colorado College----- Biology laboratory, Ralph J. Gilmore. Chemistry laboratory, Frank W. Douglas. Geology laboratory, Henry E. Mathias. Materials testing laboratory, Frank M. Okey. Physics laboratory, Paul E. Boucher. Psychology laboratory, William A. Blakely.	020c, 040cp, 100c, 120c, 140c, 160c, 170c, 200c, 410p, 500ch, 510cpi, 530cpi, 600cp, 610cp, 620c, 640cp, 650c, 660c, 690c, 800c, 840c, 850c, 910p.
FORT COLLINS:	
Colorado State College of Agriculture and Mechanic Arts.--- Agricultural machinery laboratory, L. D. Crain. Animal husbandry laboratory, George E. Morton. Bacteriology laboratory, I. E. Newsom. Chemistry research laboratory, J. W. Tobiska. Dairy laboratory, George E. Morton. Electrical laboratory, Henry G. Jordan. Geology laboratory, Roy Coffin. Hydraulic laboratory, Ralph L. Parshall. Nutrition and textile laboratories, Inga K. Allison. Pathology laboratory, I. E. Newsom. Physics laboratory, Fred G. Person. Road materials laboratory, E. B. House. Seed laboratory, A. M. Lute. Steam and gas engines laboratory, L. D. Crain. Textiles laboratory, Inga M. K. Allison. Veterinary laboratory, I. E. Newsom.	000bet, 010ct, 020cpb, 100abet, 110ct, 120abc, 130c, 140c, 160c, 170c, 240bpt, 280c, 300ap, 340c, 360ap, 390ap, 500c, 510cmp, 530cmp, 570c, 590c, 630c, 640c, 650c, 680c, 700cis, 710s, 730s, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 910psi, 950p, 970p, 980p.
GOLDEN:	
Colorado School of Mines----- Chemical laboratory, R. A. Baxter. Clay laboratory, W. P. Huleatt. Experimental plant laboratory, A. J. Weinig. Geophysics laboratory, C. A. Heiland.	500cp, 510cp, 530cp, 540cp, 550cp, 570c, 590cp, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm.

CONNECTICUT

HARTFORD:	
Trinity College----- Bacteriology laboratory, H. C. Swan. Biology laboratory, T. H. Bissonnette. Chemistry laboratory, Vernon K. Kriebel. Physics laboratory, Henry A. Perkins.	010c, 020c, 040c, 100c, 110c, 140c, 150c, 160c, 170c, 500c, 510c, 520c, 530c, 540c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 800c, 820c, 830c, 850c, 870c, 880c, 890c.
NEW HAVEN:	
Yale University, School of Engineering----- Dunham electrical laboratory, R. E. Doherty. Engineering mechanics laboratory, C. J. Tilden. Hammond metallurgical laboratory, C. H. Mathewson. Mason mechanical laboratory, S. W. Dudley. Sterling chemistry laboratory, B. F. Dodge.	410p, 500c, 510p, 530p, 550cp, 600pm, 610pm, 620pm, 630pm, 640pm, 650pm, 680pm, 690pm, 700hps, 710s, 720s, 800c, 820c, 830c, 840c, 880c, 890c.

DELAWARE

NEWARK:	
University of Delaware----- Agricultural chemistry laboratory, A. A. Horvath. Agronomy laboratory, G. L. Schuster. Bacteriology laboratory, C. C. Palmer. Chemistry laboratory, A. S. Eastman. Electrical laboratory, G. A. Koerber. Horticultural laboratory, L. R. Detjen. Hydraulic laboratory, T. D. Mylrea. Materials testing engineering laboratory, H. K. Preston. Mechanical laboratory, R. L. Spencer. Physics laboratory, J. F. Daugherty. Plant pathology laboratory, T. F. Manns.	020cb, 100ac, 110ac, 130a, 240acp, 250ap, 290abc, 400cp, 410cp, 500cp, 510cp, 530cp, 600acp, 610c, 640acp, 700ehpls, 710ehpls, 760ehpls, 780ehpls, 790ehpls, 800c, 820c, 830c, 850cp, 890c.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

DISTRICT OF COLUMBIA

Location and name of laboratory	Commodities and nature of tests ¹
WASHINGTON:	
Catholic University of America.....	500ch, 510ip, 600ep, 610ip, 640p, 700s, 710is, 800c, 910s.
Aeronautical laboratory, L. H. Crook.	
Biological laboratory, J. B. Parker.	
Chemical laboratory, H. Chambliss.	
Civil engineering laboratory, A. J. Scullen.	
Electrical laboratory, T. J. MacKavanagh.	
Geological laboratory, A. R. Barwick.	
Mechanical engineering laboratory, G. A. Weschler.	
Mechanics laboratory, L. H. Crook.	
George Washington University.....	040bc, 140c, 220ct, 410p, 500ph, 510p, 530cp, 600p, 610p, 700sp, 710csp, 810ct, 820c, 830c, 880bc.
Bacteriology laboratory, E. B. McKinley.	
Biochemistry laboratory, Vincent du Vigneaud.	
Chemistry laboratory, B. D. Van Evera.	
Civil engineering laboratory, Frank A. Hitchcock.	
Electrical engineering laboratory, Norman B. Ames.	
Mechanical engineering laboratory, A. F. Johnson.	
Pathology laboratory, Edward B. Vedder.	
Pharmacology laboratory, George B. Roth.	
Georgetown University.....	150ca, 230c, 500c, 570ct, 600cm, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810bc, 820c, 830c, 880c, 890c.
Biology laboratory, David McCauley.	
General chemistry laboratory, Joseph A. Muldoon.	
Organic chemistry laboratory, Lawrence C. Gorman.	
Physical chemistry laboratory, Hartley Howard.	
Physics laboratory, E. J. Kolkmeier.	
Quantitative chemistry laboratory, Arthur A. Espen-scheid.	
Research chemistry laboratory, Michael X. Sullivan.	

FLORIDA

DELAND:	
John B. Stetson University.....	000ab, 010abc, 020abc, 030b, 040abc, 090abc, 100abc, 110abc, 120abc, 130-abc, 140abc, 150abc, 160abc, 170ac, 240ab, 250ab, 280a, 290a, 300a, 320a, 330a, 340ab, 500c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 710ep, 800c, 810c, 830c, 850c, 870c, 890c.
Biological laboratory, C. B. Vance.	
Chemistry laboratory, John F. Conn.	
Civil engineering laboratory, Donald Faulkner.	
Electrical laboratory, R. I. Allen.	
Mechanical laboratory, C. M. Lowry.	
Physical laboratory, R. I. Allen.	
GAINESVILLE:	
University of Florida.....	000t, 020ac, 040ac, 090ct, 100c, 110c, 120c, 130c, 140ac, 150c, 160ac, 170c, 200c, 210ac, 220ac, 230c, 280ac, 290ac, 500acp, 510ac, 520acs, 530ch, 540cs, 550c, 570c, 590c, 600ampe, 620c, 630c, 640c, 650ct, 660c, 680c, 690c, 700-ilps, 710eips, 800ac, 810act, 820ac, 830ac, 840cs, 850c, 860c, 870c, 880ca, 890c, 910is, 970c, 990c.
Chemistry laboratory, T. R. Leigh.	
Civil engineering laboratory, P. L. Reed.	
Electrical engineering laboratory, J. Weil.	
Mechanical engineering laboratory, M. Price.	
Physics laboratory, R. C. Williamson.	

GEORGIA

ATHENS:	
Georgia State College of Agriculture.....	000abc, 020abc, 100abc, 110abc, 120-abc, 130abc, 240ab, 250ab, 260ab, 300a, 390a, 710aep, 730ap, 810ac, 850ac.
Agricultural chemistry laboratories, L. M. Carter.	
Agricultural engineering laboratories, R. H. Drifmiller.	
Agronomy laboratories, John R. Fain.	
Animal husbandry laboratories, M. P. Jarnagin.	
Forestry laboratories, G. D. Marckworth.	
Home economics laboratories, Mary E. Creswell.	
Horticultural laboratories, T. H. McHatton.	
Poultry husbandry laboratories, Frank Mitchell.	
Veterinary laboratories, A. G. G. Richardson.	
University of Georgia.....	020c, 040c, 050c, 060c, 090c, 100c, 110c, 140c, 150c, 160c, 170c, 220c, 230c, 260c, 300c, 320c, 330c, 360c, 370c, 390c, 500c, 510c, 520c, 530c, 540c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 710es, 730s, 800c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Agricultural engineering laboratory, R. H. Drifmiller.	
Chemical laboratory, A. W. Scott.	
Electrical laboratory, U. H. Davenport.	
Physics laboratory, L. L. Hendren.	

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

GEORGIA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
ATLANTA: Georgia School of Technology----- Aeronautical engineering laboratory, M. Knight. Bactinology laboratory, H. S. Wyckoff. Ceramic engineering laboratory, A. V. Henry. Chemistry and chemical engineering laboratory, G. H. Boggs. Civil engineering laboratory, F. C. Snow. Electrical engineering laboratory, F. W. Fitzgerald. Mechanical engineering laboratory, R. S. King. Physics laboratory, J. B. Edwards. Textile engineering laboratory, C. A. Jones.	020ab, 040aceips, 090b, 170ab, 210- aceips, 300acips, 310acips, 320acips, 330acips, 340acips, 360acips, 370- acips, 390acips, 410aips, 420i, 500- chip, 510achips, 520c, 530acips, 540- acips, 550acips, 560acips, 570acips, 590acips, 600aipshm, 610himp, 620- himp, 630himp, 640himp, 650himp, 660himp, 680himp, 690himp, 700- hilps, 710hilps, 720ahilpse, 730hilps, 740hilps, 750hilps, 760hilps, 770ahilps, 780hilps, 790hilps, 880b, 890acips, 910ips.
HAWAII	
HONOLULU: University of Hawaii----- Chemical laboratory, E. T. Dillingham. Dairy laboratory, L. A. Henke. Engineering laboratory, A. R. Keller. Physical laboratory Paul Kirkpatrick.	020bc, 100c, 120c, 130c, 160c, 420p, 500c, 600cp, 610cp, 620ep, 630cp, 640cp, 650cp, 690cp, 710c, 800c, 820c, 830c, 850c, 880c, 890c, 910epx.
IDAHO	
Moscow: University of Idaho----- Agricultural chemistry laboratory, H. P. Magnuson. Agronomy laboratory, H. W. Hulbert. Animal husbandry laboratory, C. W. Hickman. Bacteriology laboratory, W. V. Halverson. Biology laboratory, H. B. Stough. Chemical laboratory, L. C. Cady. Dairy husbandry laboratory, D. R. Theophilus. Electrical engineering laboratory, J. Hugo Johnson. Entomology laboratory, Claude Wakeland. Forestry laboratory, R. E. McArdle. Geology and mineralogy laboratory, A. L. Anderson. Horticultural laboratory, Leif Verner. Materials testing laboratory, Ivan C. Crawford. Mechanical engineering laboratory, Henry F. Gauss. Metallurgical laboratory, A. W. Fahrenwald. Physics laboratory, G. W. Hammar. Plant pathology laboratory, C. W. Hungerford. Zoology laboratory, H. B. Stough.	000ac, 010abc, 020abc, 030abc, 040abr, 050ab, 060ab, 100abc, 110abc, 120- abc, 130abc, 140abc, 150ab, 160abc, 170abc, 220c, 230c, 240c, 250c, 260c, 400pibc, 410pibc, 420pibc, 500pi, 510- pis, 530cp, 540c, 570c, 590c, 600- cpmi, 610p, 620p, 630cp, 640cp, 650c, 680c, 690cp, 700psl, 710ep, 740psl, 760psl, 780psl, 800bp, 810bc, 820c, 850bc, 880b, 890c, 910aehxp.
ILLINOIS	
BLOOMINGTON: Illinois Wesleyan University----- Biology laboratory, W. D. Webster. Chemical laboratory, F. S. Mortimer. Geology laboratory, E. T. Apfel. Physics laboratory, T. F. Hargitt.	010abc, 020abc, 030abc, 040c, 050c, 090abc, 100acp, 110c, 120abc, 130abc, 140c, 160c, 170c, 500ac, 510ac, 530ac, 550a, 560a, 570ac, 590ac, 600c, 620c, 630c, 640c, 650c, 680c, 690c, 710c, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
CHICAGO: Armour Institute of Technology----- Chemical engineering laboratory, H. McCormack. Electrical laboratory, E. H. Freeman. Engineering materials laboratory, P. C. Huntly. High frequency electrical laboratory, A. W. Sear. Internal combustion engineering laboratory, D. Roesch. Physics laboratory, J. S. Thompson. Steam and refrigeration laboratory, E. S. Libby. Thermal conductivity and lubrication laboratory, J. C. Peebles.	040c, 060ps, 090p, 100c, 140ps, 160c, 200ipesc, 210c, 280c, 300cps, 310ipsh, 320ipsh, 330ipsh, 340ipsh, 360ipsh, 370ipsh, 390ipsh, 400ip, 410iph, 420- iph, 430ip, 470ec, 500ephsc, 510hipsc, 520heipsc, 530chips, 540chip, 550ce, 560c, 570ce, 590cpe, 600ehipscm, 610- hipscm, 620hipscm, 630hipsc, 640- pscme, 650pscme, 660c, 680pscme, 690hipscm, 700ips, 710c, 740ips, 760- ips, 780ips, 790ips, 800c, 820c, 830c, 840cps, 850c, 870c, 880cips, 890c, 940ips, 950ips, 990ips.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

ILLINOIS—Continued

Location and name of laboratory	Commodities and nature of tests ¹
CHICAGO—Continued.	
Lewis Institute-----	400p, 410p, 500c, 510p, 600cp, 610cp, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 710s.
Chemistry laboratory, W. R. Smith.	
Electrical laboratory, F. A. Rogers.	
Physics laboratory, F. A. Rogers.	
Structural materials research laboratory.	
Loyola University of Medicine-----	810t.
Anatomical laboratory, T. T. Job, R. M. Strong.	
Bacteriological laboratory, E. Pribram, L. Hill.	
Chemical laboratory, William C. Austin.	
Pathological laboratory, F. A. McJunkin.	
Pharmacological laboratory, H. N. Ets.	
Physiological laboratory, T. E. Boyd.	
Northwestern University.	<i>See Evanston.</i>
University of Chicago-----	000b, 010b, 020cb, 030cb, 040cb, 090-cbt, 100cbt, 120b, 140cbt, 160cp, 200-cbt, 290cbt (alkaloids), 300cp, 360cp, 370cp, 520p, 600c, 610c, 710s, 800cb, 810cb, 880cb, 910s.
Bacteriology laboratory, W. H. Taliaferro.	
Department of home economics laboratory, Lydia J. Roberts.	
Hygiene and bacteriology laboratory, W. H. Taliaferro.	
Kent chemical laboratory, H. I. Schlesinger.	
Pathology laboratory, H. G. Wells.	
Physics laboratory, H. G. Gale.	
Physiological chemistry and pharmacology laboratory, F. C. Koch.	
EVANSTON:	
Northwestern University-----	020b, 090bet, 120bt, 390a, 470a, 510a, 520a, 550a, 560a, 590a, 650mp, 660mp, 810ac, 880b, 910p.
Bacteriology laboratory, A. A. Day.	
Botany laboratory, C. B. Atwell.	
Chemistry laboratory, Frank C. Whitmore.	
Chemistry laboratory (dental), H. C. Benedict.	
Geological laboratory, U. S. Grant.	
Histology and pathology laboratories, V. G. Skillen, E. H. Hatton.	
Pathology laboratory, J. P. Simonds.	
Physics laboratory, B. J. Spence.	
Physiological chemistry laboratory, C. J. Farmer.	
Physiology and pharmacology laboratories, A. C. Ivy.	
Prosthetics laboratory, L. D. Sayre.	
Zoology laboratory, F. D. Barker.	
MONMOUTH:	
Monmouth College-----	110c, 150c, 170c, 500cp, 510cpa, 600c, 630c, 640c, 650c, 680c, 690c, 850c, 890c.
Analytical laboratory, G. W. Thiessen.	
Research laboratory, W. S. Haldeman.	
NAPERVILLE:	
North Central College-----	000b, 010b, 020cb, 030b, 120cb, 130c, 240pa, 250pa, 300ac, 330ac, 340ac, 360c, 400c, 470c, 500c, 510pa, 600c, 630c, 640c, 650c, 680ch, 690c, 710ep, 800c, 820c, 830c, 870c, 880c, 890c, 910pea.
Botany and geology laboratory, C. L. Watson.	
Chemistry laboratory, M. E. Nonnamaker, L. A. Priem.	
Foods laboratory, Hazel M. Snyder.	
Physics laboratory, C. N. Wall.	
Zoology laboratory, H. J. Eigenbrodt.	
PEORIA:	
Bradley Polytechnic Institute-----	020b, 040c, 090c (tankage, blood greases), 160c (molasses), 500clp (coal, petroleum products), 510c, 600c, 640c (copper), 710s, 750is, 760is, 770is, 780is, 790is, 850c.
Biology laboratory, W. H. Packard.	
Chemistry laboratory, G. C. Ashman.	
Electrical laboratory, Fred Dace.	
URBANA:	
University of Illinois-----	000abt, 010abcp, 020abch, 040ap, 100abcehp, 110abchp, 120abchp, 130abchp, 140abcp, 160acp, 240abcp, 250abcp, 280acp, 300ap, 360ap, 590ps, 730aps, 850acp, 890bcp.
Agricultural engineering laboratory, E. W. Lehmann.	
Agronomy laboratory, W. L. Burlison.	
Animal husbandry laboratory, H. P. Rusk.	
Applied chemistry testing work laboratory, J. M. Lindgren.	
Applied mechanics laboratory, F. B. Seely.	
Bacteriological laboratory, F. W. Tanner.	
Ceramic engineering laboratory, C. W. Parmelee.	
Chemical engineering laboratory, D. B. Keys.	
Chemistry laboratory, Roger Adams.	
Dairy husbandry laboratory, H. A. Ruehe.	
Electrical engineering laboratory, E. B. Paine.	
Engineering experiment station, M. L. Enger.	

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

ILLINOIS—Continued

Location and name of laboratory	Commodities and nature of tests ¹
URBANA—Continued. University of Illinois—Continued. Highway engineering laboratory, W. C. Huntington. Home economics laboratory, Miss Ruth A. Wardall. Horticultural laboratory, J. C. Blair. Mechanical engineering laboratory, O. A. Leutwiler. Mining engineering laboratory, A. C. Callen. Physics laboratory, F. W. Loomis. Railway engineering laboratory, E. C. Schmidt.	

INDIANA

BLOOMINGTON: Indiana University----- Botany laboratory, David M. Mottier. Chemistry laboratory, Robert L. Lyons. Geological laboratory, E. R. Cummings. Physics laboratory, Arthur L. Foley.	100acp (cereals), 500achp, 510cap, 530ahpc, 550ahs, 630p, 640p, 650p, 660cp, 680cp, 690p, 710cs (storage batteries), 750i, 790s, 890c, 910p, 920p.
CRAWFORDSVILLE: Wabash College----- Botanical laboratory, A. R. Bechtel. Chemistry laboratory, L. B. Howell. Physics laboratory, George W. Horton. Zoology laboratory, W. H. Johnson.	000a, 010a, 020cb, 110c, 140ca, 160c, 170c, 240b, 300ac, 360ac, 390ac, 500c, 510c, 570c, 600c, 610c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 820c, 830c, 840ac, 850c, 870c, 890c.
FRANKLIN: Franklin College----- Biological laboratory, C. A. Deppe. Botanical laboratory, Naomi Mullendore. Chemical laboratory, N. J. Harrar. Physics laboratory, D. F. Heath.	000b, 010b, 020b, 030b, 120a, 130a, 170b, 240a, 250a, 260a, 290a.
HANOVER: Hanover College----- Biology laboratory, J. L. Hyatt. Chemistry laboratory, Ned Guthrie. Geology laboratory, G. T. Wickwire. Physics laboratory, R. E. Martin.	000b, 240a, 300a, 330p, 370a, 520a, 600p, 620p, 630cp, 640cp, 650cp, 680cp, 690cp, 820c, 830c, 850c, 890c, 910aps.
INDIANAPOLIS: Butler University----- Chemical laboratory, G. H. Shadinger. Physical laboratory, S. E. Elliott.	200cp, 210c, 300ep, 500cep, 510c, 520cep, 530c, 550c, 570ce, 600cep, 630cep, 640cep, 650cep, 680cep, 690cp, 710c, 820c, 830c, 840a, 850c, 880c, 890c.
LAFAYETTE: Purdue University----- Agricultural chemistry laboratories, H. R. Kraybill. Agricultural experiment station, J. H. Skinner. Chemical engineering laboratory, A. A. Potter. Chemical laboratory, R. M. Middleton. Civil engineering laboratory, W. K. Hatt. Electrical engineering laboratory, C. F. Harding. Engineering laboratories and engineering experiment station, A. A. Potter. Mechanical engineering laboratory, G. A. Young. Physical laboratory, K. Lark Horovitz. Practical mechanics laboratory, J. D. Hoffman.	010c, 020c, 040c, 100c, 110ac, 120c, 130c, 140c, 200ep, 210ep, 240b, 260c, 320ep, 400ep, 410p, 420ep, 470ep, 500cpe, 510pe, 520c, 530ce, 550ce, 570eps, 590ep, 600cpme, 610cpme, 620cpm, 630cpme, 640cpme, 650cpme, 680ce, 690ce, 700s, 710sem, 720sem, 730p, 750s, 760s, 780s, 790s, 800ce, 820c, 840ce, 850c, 880c, 910pse.
NORTH MANCHESTER: Manchester College----- Biological laboratory, Ed. Kintner. Chemical laboratory, C. W. Holl. Physical laboratory, C. S. Morris.	630cm, 640cm, 650cm, 680cm, 820c, 850c, 870cap, 880bc.
NOTRE DAME: University of Notre Dame----- Bacteriology laboratory, J. A. Reyniers. Biology laboratory, F. A. Wenninger. Chemistry and chemical engineering laboratories, H. B. Froning. Metallurgical laboratory, E. G. Mahin. Mining engineering laboratory, K. B. Smith. Organic research laboratory. Pharmacy laboratory, L. H. Baldinger.	020cb, 040cb, 070c, 100c, 110c, 140c, 150c, 160c, 170c, 210c, 220c, 280c, 290c, 500chp (coal), 510cp, 520cp, 530cp, 600cp, 610cp, 620cp, 640cp, 650cp, 680cp, 690cp, 810c, 820c, 830c, 840c, 850c, 870c, 880cb, 890c.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

INDIANA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
TERRE HAUTE: Rose Polytechnic Institute----- Chemical laboratory, John White. Civil engineering laboratory, R. L. McCormick. Electrical laboratory, C. C. Knipmeyer. Mechanical laboratory, Carl Wischmeyer. Physical laboratory, B. A. Howlett. Shops, George W. Greenleaf.	040cl, 100c, 110c, 140l, 400p, 410p, 500clph, 510clp, 520cpea, 530cpeh, 570c, 590c, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660c, 680cp, 690cp, 700ps, 710ehis, 740s, 790s, 820c, 830c, 840c, 850c, 880c, 890c, 910eisahp.
IOWA	
AMES: Iowa State College----- Agricultural engineering laboratory, J. B. Davidson. Animal husbandry laboratory, H. H. Kildee. Bacteriology laboratory, R. E. Buchanan. Botanical laboratory, I. E. Mielhus. Ceramics laboratory, P. E. Cox. Chemical engineering laboratory, O. R. Sweeney. Chemistry laboratory, W. F. Coover. Civil engineering laboratory, A. H. Fuller. Corn research laboratory, R. M. Hixon. Dairy industry laboratory, M. Mortensen. Electrical engineering laboratory, F. E. Johnson. Engineering experiment station, T. R. Agg. Farm crops laboratory, P. E. Brown. Geology laboratory, C. S. Gwynne. Horticulture laboratory, B. S. Pickett. Mining engineering laboratory, O. R. Sweeney. Physics laboratory, J. W. Woodrow. Soils laboratory, P. E. Brown. Veterinary investigation laboratory, Charles Murray. Zoology and entomology laboratory, C. J. Drake.	000a, 010ai, 020abcips, 050ai, 100aisc, 110ais, 120ais, 130ais, 150bc, 160bc, 170bc, 220c, 240ai, 250i, 290bc, 300acs, 340cips, 360acs, 370acs, 390acs, 470c, 500achm, 510acips, 520ap, 530ahips, 600mps, 710s, 730ailps, 740ailps, 800c, 810cbt, 820c, 850cips, 880cips.
GRINNELL: Grinnell College----- Botany laboratory, H. S. Conard. Chemical laboratory, L. P. Sherman. Physics laboratory, G. O. Gale. Zoology laboratory, H. W. Norris.	020cp, 100a, 140cp, 160cp, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 670cp, 680cp, 690cp, 850cp.
IOWA CITY: State University of Iowa----- Analytical chemistry laboratory, Louis Waldhaver. Automotive testing laboratory, T. G. Caywood. Biological laboratory, Henry A. Mattill. Chemical engineering laboratory, H. L. Olin. Communication laboratory, J. L. Potter, Carl Menzer. Electrical engineering laboratory, E. B. Kurtz. Engineering materials laboratory, C. J. Posey. Experimental engineering laboratory, C. C. Williams. Fuel laboratory, H. O. Croft. Heat engine laboratory, G. J. Keller. High voltage laboratory, C. E. Corcoran. Hydraulics laboratory, F. T. Mavis. Illumination laboratory, R. R. Whipple. Manufactures laboratory, R. M. Barnes. Metallurgical laboratory, A. P. Hoelscher. Organic chemistry laboratory, L. Charles Raiford. Pharmacy laboratory, Wilber J. Teeter. Physics laboratory, George W. Stewart. Radio laboratory, Carl Menzer. Sanitary laboratory, Edward Bartow. Steam and gas engineering laboratory, G. J. Keller. Water and sewage laboratory, J. J. Hinman.	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, 620cp, 630cp, 640cp, 650c, 680c, 690c, 700s, 710s, 720s, 750s, 800c, 810c, 820c, 830c, 870c, 880c, 890c.
MOUNT VERNON: Cornell College----- Biology laboratory, Harry M. Kelly. Chemical laboratory, James B. Culberson, Walter S. Irvine. Geology laboratory, Donald B. Gould. Physics laboratory, Roy A. Nelson.	020cp, 140cp, 160cp, 500c, 510c, 530cp, 590c, 600c, 640c, 650c, 850c.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

KANSAS

Location and name of laboratory	Commodities and nature of tests ¹
BALDWIN CITY: Baker University----- Biology and bacteriology laboratory, C. Hartley. Chemistry laboratory, E. J. Cragoe. Physics laboratory, S. A. Deel.	010ab, 020abc, 040abc, 140cp, 170cpb, 600c, 640c, 650c, 680c, 710p, 820c, 850cp, 880cb, 970cp.
LAWRENCE: University of Kansas----- Bacteriological laboratory, N. P. Sherwood. Chemistry laboratory, H. P. Cady. Civil engineering laboratory, H. A. Rice. Electrical laboratory, D. C. Jackson, Jr. Entomology laboratory, H. B. Hungerford. Experimental engineering laboratory, G. C. Schaad. Highway engineering laboratory, W. V. McNoun. Hydraulics laboratory, F. M. Dawson. Mechanical laboratory, A. H. Sluss. Metallurgical laboratory, E. D. Kinney. Mining laboratory, C. M. Young. Railway engineering laboratory, F. A. Russell. State chemical research laboratory, H. C. Allen. State drug laboratory, L. D. Havenhill. State food laboratory, Henry Werner. Water and sewage laboratory, E. Boyce.	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, 600acmp, 610- acmp, 620acmp, 630acmp, 640acmp, 650acmp, 680amc, 690acmp, 700i, 710i, 740i, 750i, 800ac, 810ac, 820ac, 830ac, 840ac, 850ac, 860ac, 870ac, 880abc, 890ac.
MANHATTAN: Kansas State College----- Agricultural engineering laboratory, F. C. Fenton. Bacteriology laboratory, L. D. Bushnell. Botany laboratory, L. E. Melchers. Chemistry laboratory, H. H. King. Civil engineering laboratory, L. E. Conrad. Electrical laboratory, R. G. Koeffler. Engineering experiment station, R. A. Seaton. Entomology laboratory, George A. Dean. Mechanical engineering laboratory, Linn Helander. Physics laboratory, J. O. Hamilton. Road materials testing laboratory, C. H. Scholer. Seed laboratory, R. I. Throckmorton.	000abc, 010abc, 020abc, 040c, 090abc, 100abc, 110bc, 120bc, 130bc, 140bc, 150c, 160ac, 170c, 240abc, 250ab, 400c, 500hcp, 510cp, 570c, 630c, 680c, 700p, 710c, 720p, 730p, 740p, 800c, 820c, 830c, 840c, 850cb, 880bc, 890c.
OTTAWA: Ottawa University----- Bacteriology laboratory, W. B. Wilson. Chemical laboratory, Willis W. Floyd.	020b, 100c, 110c, 120c, 130c, 140c, 160c, 170c, 220c, 280ca, 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.

KENTUCKY

LEXINGTON: University of Kentucky----- Agricultural experiment station, Thomas Cooper. Chemistry laboratory, A. N. Maxson. 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.	110aci, 400p, 410p, 500pc, 510pc, 530pc, 600pcme, 610cpm, 620epcm, 630m, 640epcm, 650epcm, 660cm, 680cm, 700hs, 710ehs, 790s, 800pc.
LOUISVILLE: University of Louisville----- Chemical and chemical engineering laboratory, R. C. Ernst. Civil engineering laboratory, W. B. Wendt. Electrical laboratory, S. T. Fife. Mechanical laboratory, B. M. Brigman. Physics laboratory, D. M. Bennett.	040cp, 100cp, 140c, 410p, 500cp, 510cp, 530c, 540c, 600cpm, 610cpm, 630cpm, 640cpm, 700s, 710s, 790c, 800cp, 820cp, 830c, 840cp, 850c, 880c, 890c.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

LOUISIANA

Location and name of laboratory	Commodity and nature of tests ¹
BATON ROUGE:	
Louisiana State University and Agricultural and Mechanical College.	000abi, 010abci, 020abci, 040cl, 110aci, 120ai, 130ai, 140cl, 150c, 160c, 240bis, 290bi, 330cp, 420p, 470c, 500cpl (oil), 510csp, 570ac, 590ac, 600p, 630p, 640p, 650p, 680p, 700s, 710s, 730ps, 750s, 790ps, 800c, 810c, 820c, 830c, 840c, 850ic, 860c, 870c, 880c, 890c.
Aeronautical engineering laboratory, Wm. G. Brown.	
Agricultural experiment station, C. T. Dowell.	
Chemical laboratories, Messrs. Coates, Fieser, Chappin, Horton, Menville, Edwards.	
Electrical laboratory, M. B. Voorhies.	
Engineering experiment station laboratory, L. J. Lassalle.	
Hydraulic engineering laboratory, G. N. Cox.	
Materials of construction laboratory, W. Whipple.	
Mechanical engineering laboratory, Hamilton Johnson.	
NEW ORLEANS:	
The Tulane University of Louisiana, College of Engineering.	410p, 500ch, 510p, 530p, 600cp, 610cp, 620cp, 630cp, 640cp, 650cp, 660cp, 680cp, 690cp, 710s, 750s, 790s, 800c, 820c, 830c, 840c, 870c, 880c, 890c, 910s.
Electrical engineering laboratory, C. W. Ricker.	
Experimental engineering laboratory, W. B. Gregory.	
Industrial chemistry laboratory, C. S. Williamson, Jr.	
PINEVILLE:	
Louisiana College.	170abc, 510ac, 600c, 610c, 620c, 630c, 640c, 650c, 670c, 810c, 820c, 840c, 850c, 870c, 880bc.
Biology laboratory, O. B. Owens.	
Chemistry laboratory, J. H. Colvin.	
Physics laboratory, J. H. Colvin.	

MAINE

ORONO:	
University of Maine.	020c, 040acp, 060acp, 090c, 100acp, 110acp, 140acp, 150acp, 160acp, 170acp, 200acp, 210acp, 300acph, 310acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acp, 400p, 410p, 470apc, 490acp, 500acpm, 510acp, 530acp, 540c, 550c, 560acp, 570acp, 590acp, 600acpmh, 610acpm, 620acpm, 630acpm, 640acpm, 650acpm, 660acpm, 680acpm, 690acpm, 700s, 710es, 740s, 760s, 780s, 790s, 800acp, 810acp, 820acp, 830acp, 840acp, 850acp, 870acp, 880acp, 890acp, 910acp, 970acp.
Agricultural experiment station, Fred Griffiee.	
Chemistry and chemical engineering laboratory, L. C. Jenness.	
Electrical communication laboratory, W. J. Creamer, Jr.	
Electrical power laboratory, W. E. Barrows.	
Mechanical and metallographic laboratories, W. J. Sweetser.	
Pulp and paper laboratory, Paul D. Bray.	
State highway laboratory, H. W. Leavitt.	
Technology experiment station, Paul Cloke.	
WATERVILLE:	
Colby College.	020c, 040c, 140c, 160c, 170c, 400c, 500c, 510ap, 550apc, 590c, 710pe, 800c, 830c, 910pehs.
Chemistry laboratory, George F. Parmenter.	
Geology laboratory, E. H. Perkins.	
Shannon physical laboratory, N. E. Wheeler.	

MARYLAND

BALTIMORE:	
The Johns Hopkins University.	400p, 500cph, 510p, 520pm, 530chsm, 600pm, 610pm, 630pm, 640pm, 650pm, 680pm, 690pm, 700hs, 710eis, 800cps, 890cp, 910hs.
Concrete materials laboratory, J. T. Thompson.	
Electrical laboratory, J. B. Whitehead.	
Gas laboratory, W. J. Huff.	
General materials testing laboratory, F. W. Kouwenhoven.	
Heat engines laboratory, A. G. Christie.	
Highway materials laboratory, F. T. Comber, Jr.	
COLLEGE PARK:	
University of Maryland.	010a, 020abc, 090cpas, 100aip, 110ai, 120aip, 130aip, 240i, 250abi, 290abi, 510p, 600p, 610p, 700s, 710s, 730ais, 810cp, 840cp, 850cpas, 880cp, 890cp.
Agricultural experiment station, H. J. Patterson.	
Agricultural and food laboratory, L. B. Broughton.	
Bacteriological laboratory, A. L. Black.	
Civil engineering laboratory, S. S. Steinburg.	
Dairy products laboratory, De Voe Meade.	
Electrical engineering laboratory, Myron Creese.	
Engineering experiment station, A. N. Johnson.	
Feed, fertilizer, and lime laboratory, L. E. Bopst.	
Horticultural laboratory, J. H. Beaumont.	
Industrial chemical laboratory, George Machwart.	
Inorganic chemical laboratory, C. E. White.	
Organic chemical laboratory, N. L. Drake.	
Seed-testing laboratory, F. S. Holmes.	
Soils laboratory, J. E. Metzger.	
State extension service, T. B. Symons.	

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MARYLAND—Continued

Location and name of laboratory	Commodities and nature of tests ¹
EMMITSBURG: Mount St. Mary's College..... Chemical laboratory, J. F. Cogan.	200c, 370ci, 510c, 600c, 610c, 630c, 640c, 650c, 680c, 820cp, 840c, 850c.

MASSACHUSETTS

AMHERST: Massachusetts State College..... Bacteriology and physiology laboratory, G. E. Gage. Dairy glassware and Babcock machines laboratory, G. E. Gage. Dairy products laboratory, H. F. Frandser. Entomology laboratory, C. P. Alexander. Feed-control and seed-control laboratory, P. H. Smith. Fertilizer control laboratory, H. D. Haskins. Horticultural manufactures laboratory, W. W. Chenoweth. Machinery laboratory, C. I. Gunness. Milk and water laboratory, Leon Bradley. Physics laboratory, W. F. Powers. Plant pathology laboratory, A. V. Osmun. Poultry husbandry laboratory, J. C. Graham. Soil fertility laboratory, W. S. Eisenmenger. Veterinary science laboratory, J. B. Lentz.	000ab, 010a, 020abcp, 100acp, 110acpi, 120a, 130a, 240a, 250a, 260ac, 520i (dairy glassware), 530ac, 700ils, 710ils, 730ils, 740ils, 850aci, 880abc.
BOSTON: Boston University..... Chemical laboratory, E. O. Holmes, Jr., J. P. Mason, C. M. Alter.	500c, 510c, 550c, 570c, 590c, 609c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 870c, 890c.
CAMBRIDGE: Harvard University..... Chemical laboratory, A. B. Lamb. Civil engineering laboratory, Albert Haertlein. Electrical laboratory, H. E. Clifford. Mechanical laboratory, L. S. Marks. Metallurgical laboratory, Albert Sauveur. Massachusetts Institute of Technology..... Division of Industrial Cooperation, C. L. Norton, Director.	600m, 610m, 620m, 630m, 640m, 650m, 680m, 690m, 710s, 800c, 820c, 830c, 880c, 890c, 910s.
FALL RIVER: Bradford Durfee Textile School..... Textile chemistry laboratory, Leslie B. Coombs. Textile design laboratory, Alfred Higgins. Textiles—physical laboratory, William A. Goss.	300cp, 310cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp (rayon), 770s (textiles).
LOWELL: Lowell Textile Institute..... Textile chemistry laboratory, Louis A. Olney. Textile design laboratory, Hermann H. Bachmann. Textile testing and research laboratory, Herbert J. Ball. Textiles—physical laboratory, Edgar H. Barker.	230, 280, 300cpa, 310cpa, 320cpa, 330cpa, 340cpa, 360cpa, 370cpa, 390cpa, 500ch, 800c, 840c, 870c.
TUFTS COLLEGE: Tufts College..... Chemistry laboratory, F. W. Durkee. Civil engineering laboratory, S. L. Conner. Electrical laboratory, M. S. Munro. Mechanical laboratory, E. MacNaughton. Physics laboratory, G. P. Bacon. Strength of materials laboratory, H. P. Burden. Thermodynamics laboratory, C. H. Chase.	010c, 020c, 030c, 040c, 090c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 230c, 300c, 390c, 400c, 410c, 470c, 490c, 500c, 510c, 520c, 530c, 540c, 550c, 570c, 590c, 600cm, 610c, 620cm, 630cm, 640cm, 650cm, 660c, 680c, 690c, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c.
WELLESLEY: Wellesley College..... Botany laboratory, Laetitia M. Snow. Chemistry laboratory, Mary A. Griggs. Geology laboratory, Mary J. Lanier. Physics laboratory, Louise S. McDowell. Zoology laboratory, Julia E. Moody.	520ps.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MASSACHUSETTS—Continued

Location and name of laboratory	Commodities and nature of tests ¹
WORCESTER:	
Worcester Polytechnic Institute-----	020c, 030c, 040c, 060c, 120c, 130c, 140c,
Aerodynamics laboratory, K. G. Merriam.	150c, 160c, 170c, 200cp, 210c, 220c,
Alden hydraulic laboratory, C. M. Allen	230c, 280c, 310c, 410p, 500cp, 510cph,
Chemistry laboratory, W. L. Jennings.	520ca, 550p, 570c, 590c, 600 cpm,
Civil engineering laboratory, J. W. Howe.	610cpm, 620cpm, 630cpm, 640cpm,
Electrical laboratory, T. H. Morgan.	650cpm, 680cpm, 690cpm, 700s,
Mechanical laboratory, F. W. Roys.	710pms, 720s, 740s, 750s, 760s,
Physics laboratory, A. W. Duff.	780s, 790s, 800c, 810c, 820c, 830c,
	840c, 850c, 860c, 870c, 880c, 890c,
	910s.

MICHIGAN

ANN ARBOR:	
University of Michigan-----	040chp, 060p, 140chp, 200acehp, 210chp,
Engineering research laboratory, A. E. White, Director.	220cp, 230acp, 240bs, 250bs, 260bcs,
	280p, 300p, 320p, 360h, 400abchpsx,
	410p, 420p, 470acehips, 500acehps,
	510achsp, 520achp, 530achp, 540hp,
	550acmpx, 570chp, 600acehimpix,
	610aips, 620achimpix, 630achmpixhe,
	640acemphx, 650acemphx, 660acmpx,
	680acmphex, 690acemphx, 710aihpls,
	720aihpls, 760aihpls, 800acephs,
	820acehps, 830acehps, 840acehps,
	880acehps, 890acehps, 910acehilmps.
DETROIT:	
University of Detroit-----	040cpa, 100cpa, 300cpa, 370cp, 400p,
Aeronautics laboratory, Peter Altman.	410p, 500cpa, 510cp, 520cp, 530cp,
Architectural engineering laboratory, B. N. Blakeslee.	540cp, 550cp, 570cp, 590cp, 600cp,
Cement testing and concrete laboratory, C. C. Johnston.	610cp, 620cp, 630cp, 640cp, 650cp,
Chemical engineering laboratory, H. L. Coles.	660cp, 680cp, 690cp, 710isp, 720isp,
Chemistry laboratory, George J. Shiple.	800cpa, 810cpa, 820cpa, 830cpa,
Electrical laboratory, H. O. Warner.	840cpa, 850cpa, 860cpa, 870cpa,
Mechanical laboratory, F. J. Linsenmeyer.	880cpa, 890cpa, 910ips.
Physics laboratory, P. P. Harbrecht.	
Testing materials laboratory, H. E. Mayrose.	
EAST LANSING:	
Michigan State College-----	000b, 010cb, 020cb, 030c, 040c, 100cb,
Agricultural experiment laboratory, V. R. Gardner.	110cb, 120c, 130c, 140c, 150c, 160cb,
Bacteriology laboratory, Ward Giltner.	170cb, 220cb, 230c, 240c, 300c, 310c,
Beal botanical laboratory, Ernest A. Bessey.	320c, 330b, 340c, 360c, 370c, 390c,
Chemistry laboratory, E. J. Miller.	400pi, 410p, 490c, 500c, 510p, 570c,
Civil engineering laboratory, Chester Allen.	590c, 600cpm, 610cpm, 620cpm,
Electrical laboratory, L. S. Foltz.	630cpm, 640cpm, 650cpm, 680cpm,
Engineering experiment station, H. B. Dirks.	690cpm, 700s, 710es, 730s, 760s,
Farm crops laboratory, H. C. Rather.	800cb, 810cb, 820c, 830c, 840c, 850s,
Home economics laboratory, Marie Dye.	880cb, 890c.
Mechanical laboratory, H. B. Dirks.	
Metallurgical laboratory, F. G. Seifing.	
Milk and cream laboratory, E. L. Anthony.	
Wood technology laboratory, P. A. Herbert.	
HOUGHTON:	
Michigan College of Mining and Technology-----	040chlp, 060p, 140chlp, 160c, 170c,
Assaying laboratory, A. T. Sweet.	200ace, 210ace, 220ace, 230cp, 400p,
Chemical laboratory, C. M. Carson.	410p, 420p, 470p, 500chlp, 510p,
Electrical laboratory, G. W. Swenson.	520p, 530p, 550cpae, 570cpae,
Geophysical and physics laboratory, James Fisher.	590cpae, 600acehmpx, 610acehmpx,
Mechanical and testing materials laboratory, R. R. Seeber.	620acehmpx, 630acehmpx,
	640acehmpx, 650acehmpx,
	660acehmpx, 680acehmpx,
Metallographic laboratory, Corbin T. Eddy.	690acehmpx, 700hpsi, 710hpsie, 720si,
Mineralogy and petrography laboratory, C. O. Swanson--	740si, 750si, 760si, 790si, 800aclps,
Ore dressing laboratory, N. H. Manderfield.	820c, 830c, 840cps, 870cp, 880cps.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MINNESOTA

Location and name of laboratory	Commodities and nature of tests ¹
MINNEAPOLIS: University of Minnesota----- Agricultural machinery laboratory, William Boss. Analytical chemistry laboratory, I. W. Geiger. Bacteriology laboratory, W. P. Larson. Biochemistry laboratory, R. A. Gortner. Cereal chemistry laboratory, C. H. Bailey. Chemical engineering laboratory, C. A. Mann. Electric instruments laboratory, M. E. Todd. Electric power laboratory, W. T. Ryan. Engineering materials laboratory, G. C. Priester. Food chemistry laboratory, E. B. Sandell. Forestry products laboratory, H. Schmitz. Heating, ventilation, and refrigeration laboratory, F. B. Rowley. Highway engineering laboratory, F. C. Lang. Hydraulics laboratory, L. G. Straub. Internal combustion engines laboratory, B. J. Robertson. Metallography laboratory, R. L. Dowdell. Metallurgy laboratory, L. B. Pease. Mining machinery laboratory, E. W. Davis. Nutrition laboratory, L. S. Palmer. Pathology laboratory, E. T. Bell. Pharmacology laboratory, A. D. Hirschfelder. Pharmacy laboratory, F. J. Wulling. Photometric and illumination laboratory, E. W. Johnson. Radio laboratory, J. S. Webb. Seeds laboratory, A. H. Larson. Shop machinery laboratory, C. A. Koepke. Soil laboratory, F. J. Always. Steam and power plants laboratory, C. F. Shoop. Structural engineering laboratory, C. A. Hughes. Technological chemistry laboratory, A. E. Stoppel. Telephone and telegraph laboratory, H. E. Hartig. St. PAUL: Hamline University----- Biology laboratory, Walter A. Kenyon. Chemical laboratory, G. W. Muhleman. Physics laboratory, J. M. Rysgaard.	000bp, 010bp, 020c, 040cp, 060p, 100cp, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 200c, 210c, 220c, 240c, 260c, 280c, 300ca, 310ca, 320ca, 330ca, 340ca, 360ca, 370ca, 400p, 410p, 420p, 430p, 470cpa, 480pa, 490pa, 500cp, 510cp, 530cp, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660m, 680cpm, 690cpm, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800cpt, 810bc, 820c, 830c, 840c, 850c, 870t, 880cb, 910sp, 930cp, 950p. 020c, 040c, 150c, 160c, 170c, 600c, 620c, 630c, 640c, 650c, 680c, 690c, 800c, 820c, 870c, 880c.

MISSISSIPPI

CLINTON: Mississippi College----- Chemical laboratory, A. E. Wood. STATE COLLEGE Mississippi State College----- Agricultural engineering laboratory, W. C. Howell. Agronomy laboratory, A. D. Suttle. Bacteriological laboratory, H. H. Harned. Botany laboratory, J. C. McKee. Chemical laboratory, W. F. Hand. Electrical laboratory, L. L. Patterson. Entomological laboratory, Clay Lyle. Mechanical laboratory, R. C. Carpenter. Physics laboratory, Walker Kinkaid. UNIVERSITY: University of Mississippi----- Biological laboratory, F. M. Hull. Chemical laboratory, J. N. Swan. Engineering laboratory, A. B. Hargis. Medical laboratory, P. L. Mull. Pharmacy laboratory, E. L. Hammond. Physical laboratory, W. L. Kennon.	140c, 210c, 500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600c, 610c, 620c, 630c, 640c, 680c, 690c, 820c, 830c, 840c, 870c, 890c. 020c, 040c, 100c, 110c, 120c, 140c, 150c, 160c, 170c, 500ch, 510p, 530c, 600p, 700s, 730s, 820c, 830c, 840c, 850c, 880b. 160c, 170c, 410c, 500ch, 510p, 600cp, 610cp, 700s, 710s, 810c, 840c, 870c.
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¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

MISSOURI

Location and name of laboratory	Commodities and nature of tests ¹
COLUMBIA: University of Missouri----- Agricultural chemistry laboratory, A. G. Hogan. Agricultural engineering laboratory, J. C. Wooley. Botany laboratory, W. J. Robbins. Chemistry laboratory, Herman Schlundt. Dairy laboratory, A. C. Ragsdale. Engineering laboratory, F. Ellis Johnson. Entomology laboratory, Leonard Haseman. Field crops laboratory, W. C. Etheridge. Geology laboratory, E. B. Branson. Horticulture laboratory, T. J. Talbert. Mineralogical laboratory, W. A. Tarr. Soils laboratory, M. F. Miller. Veterinary laboratory, A. J. Durant. Zoology laboratory, W. C. Curtis.	000bat, 010abet, 020abcip, 030a, 040acpl, 050abt, 070a, 100abc, 110c, 120ac, 130ac, 140a, 170b, 220a, 230a, 240abc, 250ab, 340a, 400aips, 410apis, 420ips, 500clpa, 510aips, 530ap, 550ap, 590ap, 600ips, 610ips, 700is, 730a, 850a, 870a, 880a, 990cpa.
ROLLA: Missouri School of Mines and Metallurgy----- Biology laboratory, C. J. Miller. Ceramic laboratory, C. M. Dodd. Chemical laboratory, W. T. Schrenk. Civil (testing) laboratory, J. B. Butler. Electrical laboratory, F. H. Frame. Experiment station laboratory, C. Y. Clayton. Geology laboratory, G. A. Muilenburg. Mechanical laboratory, R. O. Jackson. Metallurgy laboratory, C. Y. Clayton. Mining laboratory, J. H. Steinmesch.	400p, 410p, 500chlpa, 510cpa, 520cpa, 530pchames, 540ampc, 570achs (mag- nesia), 590caehsp, 600acmp, 610acmp, 620acmp, 630acmp, 640acmp, 650acmp, 660acmp (precious metals), 680acmp, 690acmp, 700s, 710s, 750s, 800c, 820c, 830c, 880bc, 910s.
ST. LOUIS: Washington University----- Chemical engineering laboratory, L. McMaster. Civil engineering laboratory, E. O. Sweetser. Electrical engineering laboratory, W. L. Upson. Industrial engineering laboratory, A. S. Langsdorf. Mechanical engineering laboratory, E. L. Ohle.	020c, 040c, 060c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 280c, 410p, 500chpl, 510p, 530p, 550p, 570c, 600cpm, 610cp, 620cp, 630cp, 640cp, 650pc, 660cp, 680cp, 690cp, 700s, 710s, 740s, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 890c, 910s.
SPRINGFIELD: Drury College----- Biology laboratory, J. E. Cribbs. Chemistry laboratory, R. Neal. Geology laboratory, E. L. Clark. Physics laboratory, B. F. Finkel.	010c, 020bc, 120b, 130b, 170bc, 250b, 510c, 640c, 650c, 680c, 820c, 830ct, 850c, 880cb, 890c, 990hs (gas).

MONTANA

BOZEMAN: Montana State College of Agriculture and Mechanic Arts--- Agricultural engineering laboratory, H. E. Murdock. Bacteriological laboratory, D. B. Swingle. Chemical engineering laboratory, W. M. Cobleigh. Chemistry laboratory, O. E. Sheppard. Dairy products laboratory, J. A. Nelson. Electrical laboratory, J. A. Thaler. Engineering experiment station laboratory, W. M. Cob- leigh. Engineering materials laboratory, L. D. Conkling. Entomological laboratory, A. L. Strand. Experiment station chemical laboratory, Edmund Burke. Grain inspection laboratory, W. O. Whitcomb. Home economics laboratory, Jessie Richardson. Mechanical laboratory, Eric Therkelsen.	000b, 010bc, 020bc, 030c, 040c, 060p, 100acipsb, 110c, 120bc, 130bc, 150c, 160c, 240aips, 300cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 410p, 500chs, 510ps, 520p, 530cp, 600cp, 610p, 620p, 630p, 640cp, 650cp, 680p, 690cp, 700ps, 710ps, 720im, 730s, 740i, 760i, 780i, 790i, 850c, 880c, 990ps.
BUTTE: Montana School of Mines----- Geology laboratory, E. S. Perry. Metallurgical laboratory, C. L. Wilson. Ore dressing laboratory, A. M. Gaudin.	600acm, 610acm, 620acm, 640acm, 690acm.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEBRASKA

Location and name of laboratory	Commodities and nature of tests ¹
LINCOLN:	
University of Nebraska-----	100cp (flour), 250i, 510p, 530cp, 710s,
Agricultural engineering laboratory, O. W. Sjorgen.	730s (tractors), 910s.
Applied mechanics laboratory, G. R. Chatburn.	
Bacteriological laboratory, H. H. Waite.	
Botany laboratory, R. J. Pool.	
Chemistry laboratory, F. W. Upson.	
Civil engineering laboratory, C. E. Mickey.	
Dairy husbandry laboratory, H. P. Davis.	
Electrical engineering laboratory, O. J. Ferguson.	
Entomology laboratory, M. H. Swenk.	
Mechanical engineering laboratory, J. W. Haney.	
Physics laboratory, H. H. Marvin.	
Soils laboratory, W. W. Burr.	
Zoology laboratory, R. H. Wolcott.	
OMAHA:	
Creighton University-----	010cb, 020cb, 030cb, 040cb, 090cb.
Biological chemistry laboratory, V. C. Levine.	110cb, 120cb, 140cb, 150cb, 160cb,
Dental chemistry laboratory, F. J. Viner.	170cb, 220cb, 260c, 500c, 600c, 610c,
Inorganic chemistry laboratory, C. L. Kenny.	620c, 630c, 640c, 650c, 680c, 800c,
Organic chemistry laboratory, J. W. VaVerka.	810cbt, 820c.
Pharmaceutical chemical laboratory, C. W. Bauer.	

NEVADA

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

NEW HAMPSHIRE

DURHAM:	
University of New Hampshire-----	020cpb, 100cp, 110cp, 120cp, 130cp,
Agricultural and biological chemistry laboratory, T. G. Phillips.	140cp, 160c, 240c, 250p, 280c, 360p,
Agricultural experiment laboratory J. C. Kendall.	400cp, 410cp, 420cp, 430cp, 470cp,
Chemistry laboratory, H. A. Iddles.	480cp, 490cp, 500chp, 510cp, 530ps,
Civil engineering laboratory, E. W. Bowler.	550c, 600p, 730s, 850cp.
Engineering experiment station, G. W. Case.	
Geological laboratory, G. W. White.	
Home economics laboratory, Mrs. H. F. McLaughlin.	
Zoological laboratory, C. F. Jackson.	
HANOVER:	
Dartmouth College-----	570c, 640c, 650c, 680c, 690c.
Biology laboratory, W. Buyers Unger.	
Chemistry laboratory, Fletcher Low.	
Civil engineering laboratory, Frank W. Garran.	
Medical school laboratory, J. P. Bowler.	
Optical research laboratory, Adelbert Ames, Jr.	
Physics laboratory, Leslie F. Murch.	

NEW JERSEY

HOBOKEN:	
Stevens Institute of Technology-----	200c, 210c, 220c, 230c, 260c, 280c, 290c,
Chemical laboratory, Francis J. Pond.	300a, 310a, 320a, 330a, 340a, 360a,
Electrical laboratory, Frank C. Stockwell.	370a, 390a, 400a, 410ap, 420a, 430a,
Mechanical laboratory, Richard F. Deimel.	470a, 480a, 490a, 500cph, 510cph,
Physics laboratory, Percy Hodge.	520cph, 530cph, 540cph, 550cph,
	560cph, 570cph, 590cph, 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.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEW JERSEY—Continued

Location and name of laboratory	Commodities and nature of tests ¹
NEWARK: Newark College of Engineering..... Chemical laboratory, V. T. Stewart. Electrical laboratory, James C. Peet. Heat treatment laboratory, Frank D. Carvin. Mechanical laboratory, Frank D. Carvin. Physics laboratory, F. N. Entwisle. Strength of materials laboratory, F. N. Entwisle.	000c, 010c, 020c, 030c, 040c, 050, 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, 410p, 500cph, 510pc, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600apmc, 610apmc, 620apmc, 630c, 640apmc, 650c, 660c, 680c, 700peh, 710ep, 780peh, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c, 910ph, 950ph.
NEW BRUNSWICK: Rutgers University and New Jersey State Agricultural Ex- periment Station. Agricultural biochemistry laboratory, Walter C. Russell. Bacteriology laboratory, Thomas J. Murray. Ceramics laboratory, George H. Brown. Chemistry laboratory, William I. Read. Control laboratory, Chas. S. Cathcart. Dairy laboratory, John W. Bartlett. Engineering laboratories, Parker H. Daggett. Entomological laboratory, T. J. Headlee. Geological laboratory, Albert O. Hayes. Physiology and biochemistry laboratory, William H. Cole. Physics laboratory, George Winchester. Plant pathology laboratory, Wm. H. Martin. Plant physiology laboratory, John W. Shive. Plant physiology and biochemistry laboratory in horti- culture, Gordon T. Nightingale. Poultry pathology laboratory, Frederick R. Beaudette. Rural engineering laboratory, Edward R. Goss. Seed laboratory, Miss Jessie G. Fiske. Soil chemistry and bacteriology laboratory, Jacob G. Lipman; Augustine W. Blair. Water supply and sewage disposal laboratory, Willem Rudolfs. Zoology laboratory, Thurlow C. Nelson.	000cb, 020cb, 030b, 060c, 090c, 110ca, 120b, 130b, 200c, 210c, 240cs, 250bc, 360ab, 410p, 500c, 510p, 520c, 530c, 540c, 550i, 560i, 570c, 590ci, 600cp, 630cp, 640cp, 650c, 680cp, 690cpi, 710s, 730s, 800c, 840c, 850c, 880bc, 890c, 910s.
PRINCETON: Princeton University..... Chemical engineering laboratory, J. C. Elgin. Electrical laboratory, C. H. Willis. Hydraulic laboratory, L. F. Moody. Materials testing laboratory, G. E. Beggs. Mechanical laboratory, E. P. Culver.	410p, 500h, 510p, 600p, 610p, 630p, 640p, 650p, 680p, 690p, 700ps, 710es, 720p, 910pe.

NEW MEXICO

ALBUQUERQUE: University of New Mexico..... Biology laboratory, E. F. Castetter. Chemical laboratory, J. D. Clark. Civil engineering laboratory, J. H. Dorroh. Electrical laboratory, F. M. Denton. Geology laboratory, S. A. Northrop. Mechanical laboratory, M. E. Farris.	000b, 020c, 100b, 120b, 170cp, 400ips, 410ips, 500acips, 510acips, 530ips, 540a, 550a, 560a, 570a, 590a, 600ips, 640ips, 700his, 710his, 730s, 740ps, 750ps, 760ps, 850c, 880c.
SOCORRO: New Mexico School of Mines..... Chemical laboratory, F. C. M. Smithson. Concrete laboratory, J. A. Weir. Metallurgical laboratory, A. S. Walter.	500c, 510pc, 530pc, 550cp, 570pc, 590pc, 600c, 610c, 620c, 630c, 640c, 650c, 660c, 680c, 690c, 820c, 850c, 880c.
STATE COLLEGE: New Mexico College of Agriculture and Mechanic Arts..... Biological laboratory, R. F. Crawford. Chemical laboratory, C. W. Botkin. Dairy laboratory, C. C. Cunningham. Hydraulics laboratory, H. M. Milton, Jr. Metallurgical laboratory, L. B. Shires. Nutrition laboratory, W. E. Watkins. Physical laboratory, D. S. Robbins. Seeds testing laboratory, J. C. Overpeck. Soils laboratory, H. V. Jordan.	010abc, 020abc, 040c, 090c, 100ac, 110ac, 120ac, 130ac, 140ac, 150ac, 160ac, 170ac, 240abc, 360ap, 410p, 500achlp, 510acp, 520acps, 530acps, 540acps, 570acps, 590acps, 600acpm, 610acpm, 620acpm, 630acpm, 640acpm, 650acpm, 680acpm, 690acpm, 700ips, 710ips, 720ips, 730ips, 750ips, 760ips, 790ips, 800c, 820c, 830c, 850c, 880c, 890c, 910ps.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEW YORK

Location and name of laboratory	Commodities and nature of tests ¹
ALFRED: Alfred University----- Ceramic chemistry laboratory, M. J. Rice. Clay laboratory, M. E. Holmes. Glass laboratory, S. R. Scholes. Inorganic laboratory, P. C. Sanders. Mineralogy laboratory, C. R. Amberg. New York State College of Ceramics. Organic laboratory, P. C. Sanders.	020ac, 170ct, 220act, 500achl, 510achps, 520achps, 530achps, 540achp, 550achp, 600c, 810c, 820c, 830c, 870c, 880c.
BROOKLYN: Polytechnic Institute of Brooklyn----- Aerodynamic laboratory, R. P. Harrington. Analytical chemistry laboratory, G. B. L. Smith. Chemical microscopy laboratory, W. F. Whitmore. Dynamo laboratory, C. C. Whipple. Electrical communications laboratory, F. E. Canavaciol. Electrical laboratory, Robin Beach. Gas engineering and appliances laboratory, J. A. Lamber- tine. Highway materials testing laboratory, Lloyd F. Rader. Hydraulic laboratory, Harry P. Hammond. Industrial chemistry laboratory, J. C. Olsen. Material testing laboratory, O. H. Henry. Mechanical engineering laboratory, William J. Moore. Photo-elastic stress analysis laboratory, Robert G. Beer. Physical and optical laboratories, Erich Hausmann. Structural research laboratory, Edward J. Squire. Pratt Institute----- Chemical laboratories, Allen Rogers. Electrical laboratories, A. L. Cook. Forge and heat treating laboratory, C. B. Jones. Foundry, R. E. Nesbitt. Machine shop, J. W. Burley. Mechanical laboratories, F. S. Egilsrud. Physics laboratory, D. A. Isenberg. Wood shop, J. W. Burley.	210e, 300h, 360h, 370h, 400ap, 410ap, 500ahip, 510ahip, 530ap, 550e, 600ahipm, 610ahiplm, 630ahiplm, 650ahiplm, 680ahiplm, 690ahiplm, 700hilps, 710ehis, 720hilps, 740hilps, 750ips, 780hilps, 800c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c. 910aimpshe, 930ap. 040c, 050c, 060ac, 070ac, 140p, 160p, 200e, 210ce, 230c, 280cp, 400ap, 410aps, 420ap, 500cp, 510cap, 600cehmps, 610hmps, 620emp, 630cemp, 640cemp, 650cp, 680cp, 690cp, 700is, 710eis, 720is, 740is, 760is, 780is, 790is, 800ac, 820c, 830c, 840ac, 870ac, 880c, 890c, 910ip.
ELMIRA: Elmira College----- Biological chemistry laboratory, E. L. Whittaker. Chemical laboratory, F. A. Richmond. Home management and nutrition laboratories, Alma Montgomery.	010c, 020cb, 030c, 040c, 100c, 110c, 130c, 140c, 150c, 160c, 170cb, 280c, 300c, 330c, 390c, 500c, 520c, 590c, 600c, 640c, 650c, 690c, 870c, 890c.
ITHACA: Cornell University----- Chemistry laboratory, J. Papish. Electrical laboratory, P. M. Lincoln. Engineering materials laboratory, H. H. Scofield. Highway laboratory, W. L. Conwell. Hydraulic laboratory, E. W. Schoder. Materials laboratory, A. C. Davis. Metallographic laboratory, G. B. Upton, A. C. Davis. Physics laboratory, R. C. Gibbs. Photo-elastic laboratory, S. C. Hollister. Power plant mechanical laboratory, V. R. Gage, W. M. Sawdon. Sanitary laboratory, C. L. Walker.	400p, 410p, 420p, 500p, 510p, 520a, 530p, 600p, 610p, 620p, 630p, 640p, 650p, 680p, 700ps, 710ps, 750ps, 760s, 800ps, 820a, 830a, 840a, 880abc, 910s.
NEW YORK CITY: College of the City of New York----- Analytical laboratories, Robert Curtis. Electrical laboratory, H. Baum. Industrial and chemical engineering laboratory, H. R. Moody. Materials laboratory, Ralph E. Goodwin. Mechanical laboratory, Arthur Bruckner. Physical chemical laboratory, R. Stevenson. Physics laboratory, Charles A. Corcoran.	040c, 140c, 150, 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.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEW YORK—Continued

Location and name of laboratory	Commodities and nature of tests ¹
NEW YORK CITY—Continued.	
Columbia University-----	
Chemical engineering laboratories, D. D. Jackson.	010c, 020c, 030c, 040c, 050c, 060cp, 070c,
Chemistry laboratories, H. C. Sherman.	080c, 090c, 100c, 110c, 120c, 130c,
Civil engineering—materials testing laboratories, A. H. Beyer.	140c, 150c, 160c, 170c, 210c, 220c,
Electrical engineering laboratories, W. I. Slichter.	230c, 400cp, 410cp, 420c, 430c, 470c,
Mechanical engineering laboratories, C. E. Lucke.	480c, 490c, 500acplx, 510acpx,
Metallurgical laboratories, William Campbell.	520acpx, 530acpx, 540acx, 550acx,
Mineral dressing laboratories, A. F. Taggart.	560acx, 570acx, 590acx, 600acmp,
Mineralogy laboratories, Paul Kerr.	610acmp, 620acmp, 630acmp,
Mining laboratories, P. B. Bucky.	640acmp, 650acmp, 660acmp, 670ces,
Physics laboratories, G. B. Pegram.	680acmp, 690acmpx 700hls,
	710aceips, 740is, 750aps, 760is, 770is,
	780is, 790is, 800c, 810c, 820c, 830c,
	840c, 850c, 870c, 880c, 890c.
Cooper Union Institute of Technology-----	300p, 400p, 510p, 600ape, 630p, 660p,
Electrical machine laboratory, Norman L. Towle.	910e.
Electrical measurements laboratory, Norman L. Towle.	
Hydraulics laboratory, R. C. Brumfield.	
Materials testing laboratory, R. C. Brumfield.	
Hunter College of the City of New York-----	
Biological laboratory, M. A. Graham.	020abc, 100c, 140c, 240c, 300ca, 330ca,
Chemical laboratory, Charles J. Moore.	360ca, 370ca, 640c, 650c, 680c, 810c,
Geology and mineralogy laboratory, E. M. Lehnerts.	850c.
Physiology and hygiene laboratory, W. J. Fordrung.	
Manhattan College-----	
Analytical laboratory, Frederic J. Kenny.	500acips, 510acipsh, 530acipsh, 600acips,
General laboratory, Brother Adelphus Joseph.	610acips, 710ceips, 800acips, 810acips,
Organic laboratory, William F. O'Connor, Jr.	820acips, 830acips, 850acips, 870acips,
Technical laboratory, William F. O'Connor, Jr.	880abcips.
Testing laboratory, Daniel O'Connell.	
New York University-----	
Chemical engineering laboratory, H. G. Masson.	020c, 040cp, 050p, 060p, 100c, 110c,
Electrical laboratory, J. L. Arnold.	120c, 130c, 140c, 150c, 160c, 170c,
General testing laboratory, Collins P. Bliss.	200c, 210c, 220c, 230c, 300cp, 320ca,
Havemeyer chemical laboratory, J. P. Simmons.	330ca, 340ca, 360ca, 370ca, 390ca,
Materials testing laboratory, C. T. Schwarze.	410p, 470cp, 500cp, 510cp, 530cp,
	540cp, 570cp, 590cp, 600p, 610p,
	620cp, 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-----	
Chemical engineering laboratory, Charles Hecher.	410p, 500cp, 510p, 570c, 590c, 600cpm,
Civil engineering laboratory, F. C. Wilson.	610cm, 620cm, 630cpm, 640cpm,
Electrical laboratory, A. R. Powers.	650cpm, 680cpm, 690cpm, 700ehs,
Hydraulics laboratory, J. A. Ross, Jr.	710e, 730ehs, 740ehs, 800cp, 810cp,
Mechanical engineering laboratory, J. A. Ross, Jr.	820cp, 830cp, 840cp, 850cp, 870cp,
Physics laboratory, William H. Bair.	880c, 890c.
POUGHKEEPSIE:	
Vassar College-----	
Chemistry laboratory, Mary Louise Landon.	020c, 040c, 100c, 140c, 160c, 500c, 510c
Physics laboratory, Edna Carter.	(cement), 600c, 620c, 630c, 640c, 650c,
	680c, 710p, 890c.
ROCHESTER:	
University of Rochester-----	
Chemistry laboratory, W. R. Line.	500hl, 510p, 600p, 620p, 630p, 640p,
Mechanical engineering laboratory, J. W. Gavett, Jr.	650p, 680p, 690p, 780s (boiler per-
	formance).
SARATOGA SPRINGS:	
Skidmore College-----	
Bacteriology laboratory, Karl C. Hyde.	010bc, 020bc, 040bc, 100c, 110c, 140c,
Chemistry laboratory, Alton L. Markley.	160ca, 170cp, 300cpa, 310cpa, 320cpa,
Chemistry and home economics laboratory, Carolyn Turner.	330cpa, 340cpa, 360cpa, 370cpa, 390-
	cpa, 500c, 600c, 640c, 650c, 680c,
	850cs, 870c, 880cb.
SCHENECTADY:	
Union College-----	
Chemical laboratory, Edward Ellery.	020c, 040c, 100c, 120c, 130c, 140c, 400p,
Concrete laboratory, R. A. Hall.	410p, 500c, 510pi, 600cpm, 610cpm,
Electrical engineering laboratory, E. J. Berg.	630cpm, 640cpm, 650cpm, 660cp,
Materials testing laboratory, M. F. Sayre.	680cpm, 690cpm, 700is, 880c.
Physics laboratory, P. I. Wold.	

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NEW YORK—Continued

Location and name of laboratory	Commodities and nature of tests ¹
SYRACUSE:	
Syracuse University-----	000p, 010pc, 020cb, 040cp, 100ac, 110cs, 120p, 140ac, 150pe, 160c, 170c, 200c, 220c, 240a, 250i, 300ac, 330pc, 400p, 410p, 420p, 470cp, 500cp, 510cp, 520c, 530c, 540c, 550c, 570c, 590cp, 600cp, 610p, 620cp, 630cp, 640cp, 650cp, 660c, 680cp, 690cp, 710s, 800pc, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
Bacteriological laboratory, H. N. Jones.	
Botanical laboratory, W. L. Bray.	
Chemical laboratory, Albert Salathe.	
Electrical laboratory, H. W. Henderson.	
Hydraulic laboratory, H. W. Blackburn.	
Materials testing laboratory, Louis Mitchell.	
Mechanical laboratory, H. W. Blackburn.	
Physical laboratory, R. A. Porter.	
Zoological laboratory, W. M. Smallwood.	
TROY:	
Rensselaer Polytechnic Institute-----	010c, 020c, 030c, 040cl, 060p, 100c, 110c, 120c, 140cl, 160c, 170c, 200c, 210c, 220c, 280c, 290c, 300c, 320c, 330c, 360c, 370c, 390c, 400chpi, 410pi, 500ch, 510chpi, 520c, 530cpi, 540c, 550c, 570c, 590c, 600hempix, 610pinhx, 620hempix, 630cmpx, 640cmpix, 650cmx, 660m, 670p, 680cmx, 690hemp, 700hilps, 710ep, 720hilps, 750ilps, 760ilps, 780ilps, 790ilps, 800c, 810c, 820c, 830c, 840ac, 850c, 860c, 870c, 880c, 890c, 910chips, 920p, 970c.
Biological laboratory, A. W. Bray.	
Chemical laboratory, A. W. Davison.	
Engineering materials laboratory, T. R. Lawson.	
Hydraulic laboratory, G. K. Palsgrove.	
Mechanical laboratory, E. A. Fessenden.	
Metallurgical laboratory, M. A. Hunter.	
Physical laboratory, P. A. Patterson.	

NORTH CAROLINA

CHAPEL HILL:	
University of North Carolina-----	010b, 020bc, 030b, 090b, 120b, 140c, 170cab, 200acp, 210ep, 230tc, 290b, 310acp, 390acp, 500clp, 510c, 530c, 600acm, 610acm, 620acm, 630acm, 640acm, 650c, 680c, 690c, 700ps, 710p, 800cp, 810bc, 840cp, 850c, 870c, 880bc, 890c.
Bacteriology laboratory, D. A. MacPherson.	
Chemical engineering laboratory, A. M. White.	
Electrical engineering laboratory, W. J. Miller.	
Highway testing laboratory, R. M. Trimble.	
Hydraulic laboratory, J. C. Geyer.	
Industrial pharmacy and pharmaceutical laboratories, H. M. Burlage.	
Materials testing laboratory, T. F. Hickerson.	
Mechanical engineering laboratory, E. G. Hoefler.	
Pharmacy laboratory, J. G. Beard.	
Sanitary engineering laboratory, J. C. Geyer.	
RALEIGH:	
North Carolina State College of Agriculture and Engineering-----	000bc, 010p, 020pb, 040bc, 100cp, 110cp, 120b, 130b, 140bc, 230cp, 240bc, 250bs, 260cp, 280ac, 300cpa, 310cp, 390ape (rayon), 400p, 410p, 500cpl, 510p, 530cp, 600cp, 610cp, 620cp, 710ps, 730ps, 800pc, 850cb, 880cb.
Chemical engineering laboratory, E. E. Randolph.	
Cotton fibre research laboratory, J. H. Moore.	
Engineering research laboratory, Harry Tucker.	
Nutritional laboratory, J. O. Halverson.	
Soil chemistry laboratory, L. G. Willis.	
Textile research laboratory, Thomas Nelson.	
WINSTON-SALEM:	
Salem College-----	010cb, 020cb, 030cb, 040cb, 090cab, 120cb, 130cb, 140c, 150ca, 160c, 170cb, 220c, 230c, 290cab, 300ca, 360ca, 370ca, 390ca, 500c, 510c, 600c, 610c, 630c, 640c, 650c, 680c, 800c, 810c, 820c, 830ca, 840ca, 850cb, 870ca, 880cab, 890ca, 910s, 930cs, 970c, 990cbas.
Biological laboratory, Roy J. Campbell.	
Chemical laboratory, Chas. H. Higgins.	

NORTH DAKOTA

FARGO:	
North Dakota Agricultural College-----	000bit, 010cp, 020bc, 090bt, 100bc, 110abe, 240abes, 250ai, 410p, 500hp, 510p, 590pl, 600p, 610 p, 730p.
Agricultural chemistry laboratory, T. H. Hopper.	
Animal nutrition laboratory, F. W. Christensen.	
Bacteriology laboratory, C. I. Nelson.	
Botany department laboratory, H. C. Danson.	
Cereal chemistry laboratory, C. E. Mangels.	
Dairy laboratory, J. R. Dice.	
Engineering materials testing laboratory, R. M. Dolve.	
Plant breeding laboratory, L. R. Waldron.	
Poultry department laboratory, F. E. Moore.	
Serum Institute laboratory, L. M. Roderick.	
State seed laboratory, E. M. Gillig.	

¹ See pp. 1 and 2 for symbolic references

GEOGRAPHICAL LISTING OF COLLEGES—Continued

NORTH DAKOTA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
GRAND FORKS:	
University of North Dakota-----	000bt, 010bt, 100c, 110c, 120c, 130c,
Chemical laboratory, G. A. Abbott.	140c, 150c, 160c, 170c, 210ce, 500cahip,
Division of mines and mining experiment laboratory, L. C. Harrington.	510cip, 530cihp, 590c, 600cmpx, 620-
Public health laboratory, H. E. French.	cmpxa, 640cmpx, 650cmpx, 680cmpx,
	690cmpx, 780ip, 800ce, 810c, 840cpe,
	880bc, 890c, 990c.

OHIO

ADA:	
Ohio Northern University-----	030ab, 050ab, 070ab, 500ch, 510p, 600p,
Biological laboratory, H. E. Huber.	610p, 710s, 820c, 970i.
Chemical laboratory, J. R. Harrod.	
Civil engineering laboratory, A. R. Webb.	
Electrical laboratory, I. St. Clair Campbell.	
Mechanical laboratory, John A. Needy.	
Physics laboratory, F. L. Berger.	
AKRON:	
University of Akron-----	010abcit, 020abcit, 030abcit, 040c, 100-
Bacteriological laboratory, R. D. Fox.	abc, 200achlps, 300aps, 310aps, 320-
Biological laboratory, W. C. Kraatz.	aps, 330aps, 340aps, 360aps, 370aps,
Knight chemical laboratory, W. Cook.	390aps, 500cp, 510cph, 530cph, 570c,
Testing laboratory, E. F. Schaefer.	590c, 600acimp, 610acimp, 620acimp,
	630acimp, 640acimp, 650acimp, 660-
	acimp, 680acimp, 690acimp, 810c,
	820c, 830c, 840c, 850c, 870ct, 880cb,
	890c.
ATHENS:	
Ohio University-----	000b, 030b, 090b, 120b, 240b, 290b,
Anatomy laboratory, R. Elliott.	400p, 410p, 500c, 510p, 530c, 600cp,
Bacteriology laboratory, C. Frey.	630c, 640cp, 650c, 680c, 690c, 700s,
Biology and botany laboratories, W. A. Matheny.	710ps, 980c, 910sp.
Chemical laboratories, W. B. Bentley, J. R. Morton.	
Civil engineering laboratory, L. J. Addicott.	
Physics and electrical laboratory, A. A. Atkinson.	
Physiology laboratory, E. Rowles.	
Psychology laboratory, J. P. Porter.	
Zoology and embryology laboratories, F. H. Kreeker.	
CINCINNATI:	
Ohio Mechanics Institute-----	160c, 280cp, 300cp, 500cp, 510cp, 600cp,
Chemistry laboratory, E. B. Duffy.	610cp, 620cp, 630cp, 640cp, 650cp,
Electrical laboratory, P. K. Johnson.	680cp, 690cp, 710e, 870c, 880c.
Power laboratory, P. K. Johnson.	
University of Cincinnati-----	040a, 050abc, 060abcp, 140acp, 160a,
Bureau of city tests, G. A. Gray.	170c, 200cps, 210acp, 220c, 230c,
Chemical laboratory, R. S. Tour.	260acp, 300p, 310aps, 400p, 410p,
Civil engineering laboratory, H. B. Luther.	470s, 490s, 500ch, 510acp, 520acp,
Electrical laboratory, A. M. Wilson.	530acp, 550p, 560p, 590p, 600acmspx,
Geology laboratory, Nevin M. Fenneman.	610cp, 620cmp, 630cmp, 640acmpsx,
Industrial research laboratory, Herman Schneider.	650c, 680cmp, 690cm, 760p, 800c,
Lithographic research laboratory, R. F. Reed.	810c, 820c, 830c, 840cps, 850c,
Mechanical laboratory, C. A. Joerger.	860c, 870ac, 880abc, 890c, 910s,
Physics laboratory, L. T. More.	920p, 930icps, 950p.
Tanners' Council laboratory, Fred O'Flaherty.	
CLEVELAND:	
Case School of Applied Science-----	500cp, 600mp, 610mp, 620mp, 630mp,
Chemistry laboratory, W. R. Veazey.	640mp, 650mp, 690mp, 700ps, 710ps,
Electrical engineering laboratory, H. B. Dates.	760ps, 800c, 810c, 820c, 830c, 840,
Hydraulic and sanitary engineering laboratory, G. E. Barnes.	880c, 890c, 910si, 920si.
Mechanical engineering laboratory, F. H. Vose.	
Mechanics and materials laboratory, R. H. Danforth.	
Metallurgy laboratory, H. R. Boylston.	
Physics laboratory, D. C. Miller.	

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

OHIO—Continued

Location and name of laboratory	Commodities and nature of tests ¹
COLUMBUS: Ohio State University----- Agricultural chemistry laboratory, J. F. Lyman. Agricultural engineering laboratory, G. W. McCuen. Anatomy (medical) laboratory, R. C. Baker. Animal husbandry laboratory, C. W. Gay. Applied optics laboratory, C. R. Ellis. Architecture laboratory, Chas. St. John Chubb, Jr. Bacteriology laboratory, C. B. Morrey. Botany laboratory, E. N. Transeau. Ceramics laboratory, A. S. Watts. Chemical engineering laboratory, J. R. Withrow. Chemistry laboratory, Wm. McPherson. Civil engineering laboratory, C. E. Sherman. Dairying laboratory, R. B. Stoltz. Electrical engineering laboratory, E. E. Dreese. Engineering drawing laboratory, Thos. E. French. Farm crops laboratory, R. M. Salter. Fine arts laboratory, Jas. R. Hopkins. Geology laboratory, J. E. Carman. Home economics laboratory, Faith R. Gorrel. Horticulture laboratory, J. H. Cormley. Industrial engineering laboratory, John Younger. Mechanical engineering laboratory, F. W. Marquis. Mechanics laboratory, P. W. Ott. Metallurgy laboratory, D. J. Demorest. Mine engineering laboratory, H. E. Nold. Mineralogy laboratory, W. J. McCaughey. Pathology laboratory, C. L. Spohr. Pharmacy laboratory, C. A. Dye. Physics laboratory, Alpheus W. Smith. Physiological chemistry laboratory (medical), Clayton S. Smith. Physiology laboratory, F. A. Hartman. Soils laboratory, R. M. Salter. Veterinary medicine laboratory, O. V. Brumley. Zoology and entomology laboratories, R. C. Osburn.	000abc, 010abc, 020abc, 030abc, 100abcip, 110abcp, 120abcp, 130abcp, 140abc, 150abc, 160abc, 200abcp, 210abc, 220abc, 230abc, 240abcp, 250aip, 280abc, 290abc, 300acp, 310acp, 330acp, 340acp, 360acp, 390acp, 410p, 500chp, 510chp, 520cp, 530chp, 540cp, 550chp, 560acp, 570acp, 590cp, 600cmpx, 610cmpx, 680cmpx, 690cmpx, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800c, 810abcpst, 820cs, 830acs, 880acp, 890acp.
DAYTON: University of Dayton----- Biological laboratory, Francis Molz. Chemical engineering laboratory, William Wohlleben. Civil engineering laboratory, Bernard Schad, C. J. Belz. Electrical laboratory, U. J. Rappel. Mechanical laboratory, Adam Hoffmann. Mineralogical laboratory, Paul H. Koller. Physics laboratory, Michael B. Grandy, William Bellmer.	020c, 040c, 090c, 110c, 140c, 150c, 160c, 170c, 200c, 260c, 280c, 370c, 390c, 400p, 500p, 510pa, 530p, 540c, 550a, 560a, 570ca, 590ca, 600cp, 610cp, 620cpa, 630ca, 640ap, 650ca, 680ca, 690ca, 710c, 800c, 810c, 820c, 840c, 850c, 870c, 880c, 890c.
DELAWARE: Ohio Wesleyan University----- Botany laboratory, C. E. O'Neal. Chemistry laboratory, Wm. A. Manuel. Geology laboratory, L. G. Westgate. Physics laboratory, C. W. Jarvis. Psychology laboratory, L. A. Thompson. Zoology laboratory, E. L. Rice.	020cb, 100c, 420p, 500c, 510c, 520c, 550e, 620c, 630ceh, 640ch, 650c, 680c, 820c, 850c, 910s.
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----- Biology laboratory, E. R. Bryant. Chemistry laboratory, J. G. Ralston. Geology laboratory, C. F. Moses. Physics laboratory, E. Martin.	020b, 300c, 500caph, 510a, 520a, 540ah, 590a, 690ac, 710sp, 850c, 870c, 880c, 910ps.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

OHIO—Continued

Location and name of laboratory	Commodities and nature of tests ¹
OXFORD:	
Miami University----- Botany laboratory, Arthur T. Evans. Chemical laboratory, H. C. Brill. Geology laboratory, W. H. Shideler. Physics laboratory, R. L. Edwards. Physiology laboratory, B. M. Davis. Zoology laboratory, S. R. Williams.	000b, 020abc, 040c, 100abc, 110abc, 120abc, 130abc, 150c, 160c, 170c, 210aehpx, 220c, 240ab, 250ab, 260b, 290c, 300ac, 310c, 340a, 400ab, 410a, 500ac, 510ap, 520ap, 530ap, 540ap, 550ap, 560ap, 570acp, 590acp, 600acehp, 610c, 620acehp, 630acehp, 640acehp, 650acehp, 660c, 680acehp, 690acehp, 700s, 710es, 760s, 770s, 780s, 790s, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 910s, 920ip.
SPRINGFIELD:	
Wittenberg College----- Biological laboratory, W. C. Beaver. Chemistry laboratory, J. W. Barker.	000b, 010b, 020b, 030b, 100cbi, 110cb, 120b, 130b, 160cb, 250b, 300c, 500c, 570c, 590c, 600cm, 620cm, 630c, 640c, 650c, 660c, 670c, 680c, 690c, 830c, 850c, 880bci, 890c, 910i.
YELLOW SPRINGS:	
Antioch College----- Antioch Industrial Research Institute, S. Vernet, S. J. Broderick. Bacteriology laboratory, H. Federighi. Biology laboratory, O. L. Inman. Chemistry laboratory, A. M. Patterson. Geology laboratory, A. C. Swinnerton. Physics laboratory, G. E. Owen.	010ab, 020ab, 030ab, 100c, 110c, 140c, 150c, 170c, 410ah, 500ac, 510ac, 530ac, 570ac, 590ac, 600acm, 620acm, 630acm, 640acm, 650acm, 660acm, 680acm, 690acm, 710s, 930i.
OKLAHOMA	
CHICKASHA:	
Oklahoma College for Women----- Chemical laboratory, Edith R. Hammond. Organic chemistry laboratory, Meriam Buck.	020c, 040c, 140c, 300ac, 330ac, 340ac, 370ac, 390ac.
ENID:	
Phillips University----- Biology laboratory, J. C. Shirley. Chemical laboratory, V. Searth. Geology laboratory, E. L. Lucas. Physics laboratory, F. H. Knowles.	020b, 620m, 690m, 820c, 830c, 880b.
NORMAN:	
University of Oklahoma----- Chemical laboratory, Guy Y. Williams. Civil engineering laboratory, J. F. Brooks. Electrical laboratory, F. G. Tappan. Mechanical laboratory, Wm. Carson. Petroleum laboratory, Wm. Carson. Pharmaceutical laboratory, D. B. R. Johnson. Physics laboratory, H. L. Dodge.	410p, 500ch, 510p, 600cpx, 610cpx, 620cpx, 630cpx, 640cpx, 650cpx, 660cpx, 680cpx, 690cpx, 700sp, 710es, 750ps, 810abc, 820c, 830c, 910eips.
STILLWATER:	
Agricultural and Mechanical College----- Agricultural chemistry research laboratory, V. G. Heller. Cement laboratory, R. G. Saxton. Chemistry laboratory, O. M. Smith. Geology laboratory, Ray L. Six. Hydraulic laboratory, R. G. Saxton. Materials laboratory, R. G. Saxton. Road materials laboratory, R. G. Saxton. Soils laboratory, Horace J. Harper. Steam and gas laboratory, E. C. Baker.	000c, 010c, 020c, 040c, 100c, 110c, 120c, 130c, 140c, 160c, 170c, 220c, 240c, 300cpa, 360cpa, 390cpa, 500acehips, 510acephis, 520acephis, 530acephis, 540acphis, 550acphis, 560acphis, 570acphis, 590acphis, 600acehips, 610acehips, 620acehips, 630acehips, 640acehips, 650acehips, 660acehips, 680acehips, 690acehips, 700s, 780s, 790s, 810c, 820c, 830c, 840c, 850c, 880c, 890c.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

OREGON

Location and name of laboratory	Commodities and nature of tests ¹
CORVALLIS:	
Oregon Agricultural College-----	000cb, 010ab, 020cab, 030b, 040c,
Bacteriological laboratory, G. V. Copson.	090acipb, 100api, 110capi, 120cb,
Chemical engineering laboratory, C. S. Keevil.	130acip, 140acip, 170b, 200s, 210acip,
Electrical engineering laboratory, F. O. McMillan.	220acip, 230acip, 240pab, 290pab,
Grain and forage laboratory, and experimental farm laboratory, G. R. Hyslop.	300ac, 320ac, 330ap, 340api, 360ac,
Hydraulic laboratory, C. A. Mockmore.	370ac, 400p, 410p, 420acips, 470ps,
Materials testing laboratory, S. H. Graf.	500hlpmaest, 510acimp, 530achimps,
Mechanical laboratory, S. H. Graf.	540achimp, 550achimps, 560acimp,
Mines laboratory, J. H. Batcheller.	570achimp, 590achimp, 600hmpcx,
Physical laboratory, W. Weniger.	610i, 620achmp, 630hmpcx, 640hmpcx,
Seed laboratory, G. R. Hyslop.	650hmp, 660achmp, 670achmp,
Veterinary medicine laboratory, B. T. Simms.	680hmp, 690hmp, 700psi, 710ps,
	720ps, 730s, 750psi, 790ps, 800cp,
	830acip, 850acip, 880ab, 910ps.
PORTLAND:	
Oregon Institute of Technology-----	410p, 500ch, 510p, 710eips.
Engineering laboratory, Walter Haynes.	
Structural materials laboratory, Percy Bliss.	

PENNSYLVANIA

BETHLEHEM:	
Lehigh University-----	020cp, 040cp, 060p, 140cp, 160cp, 200p,
Chemistry laboratory, H. M. Ullman.	410p, 500c, 510p, 530c, 600cp, 610cp,
Electrical laboratory, S. S. Seyfert.	620cp, 630cp, 640cp, 650cp, 680cp,
Materials laboratory, Hale Sutherland.	690cp, 700s, 710s, 750s, 800c, 820c,
Mechanical laboratory, M. C. Stuart.	830c, 840c, 860c, 870c, 890c, 910s.
Metallurgy laboratory, Bradley Stoughton.	
Mining laboratory, Howard Eckfeldt.	
Physics laboratory, Charles C. Bidwell.	
EASTON:	
Lafayette College-----	010a, 020ac, 030a, 040c, 060sp, 140ce,
Chemical laboratory, E. C. Bingham.	170c, 200cep, 210ec, 280c, 290c, 300e,
Electrical laboratory, M. King.	310c, 320c, 330cp, 370e, 390c, 400cp,
Materials laboratory, E. H. Rockwell.	410p, 420p, 430p, 470e, 500ceph,
Mechanical laboratory, P. B. Eaton.	510acep, 520ep, 530cp, 550e, 570c,
Metallurgical laboratory, L. F. Witmer.	590e, 600cehmp, 610ep, 620cemp,
Mining laboratory, W. B. Plank.	630cemp, 640cemp, 650cemp,
	680cemp, 690cemp, 700hs, 710s, 720s,
	760s, 790s, 820c, 830c, 840cp, 850c,
	890c, 950p, 990p.
GETTYSBURG:	
Gettysburg College-----	020c, 140c, 170c, 410p, 510p, 600p, 850c.
Chemical laboratory, John B. Zinn.	
Civil engineering laboratory, Frank H. Clutz.	
Electrical and mechanical laboratory, R. Rosenstengel.	
LEWISBURG:	
Bucknell University-----	020cb, 040acp, 140acp, 170ct, 240cb,
Bacteriological laboratory, J. W. Rice.	250cb, 300acp, 360acp, 370acp, 410p,
Biochemical laboratory, O. S. Groner.	470ac, 490ac, 500acphl, 510acip, 520ac,
Biological laboratory, N. F. Davis.	530achp, 540achp, 550che, 570ac,
Botany laboratory, W. H. Eyster.	590acp, 600acehimp, 610achimps,
Civil engineering laboratory, D. M. Griffith.	620achimpse, 630achmp, 640achmps,
Electrical engineering laboratory, W. H. Rhodes.	650achmp, 660achmp, 680achmp,
Industrial chemistry and chemical engineering laboratories, S. C. Ogburn, Jr.	690acmp, 710eips, 740ips, 780ips,
Mechanical engineering laboratory, F. E. Burpee.	790ps, 800c, 810c, 820c, 830c, 840c,
Pattern making and foundry laboratory, G. M. Kunkle.	850c, 870c, 880cb, 890c, 970c.
Physics laboratory, F. M. Simpson.	
PHILADELPHIA:	
Drexel Institute-----	010abc, 020abc, 030abc, 040abc, 100abc,
Chemical laboratory, L. D. Stratton.	120abc, 130abc, 140abc, 150abc,
Electrical engineering laboratory, R. C. Disque.	160abc, 170abc, 200ace, 290aic,
Foods and textiles laboratories, Miss Grace Godfrey.	300abcp, 330abcp, 360abcp, 370abcp,
Mechanical engineering laboratory, J. H. Billings.	390abcp, 500chis, 510cpm, 530c,
Testing laboratory, H. L. Bowman.	540ac, 550c, 570c, 590ac, 600cpm,
	610cpm, 620cpm, 630cpm, 640cpm,
	650apm, 680cpm, 690cpm, 700ips,
	710eis, 720eps, 740eips, 760eips,
	770eps, 780eps, 790eips, 800c, 820c,
	830c, 840c, 850c, 870c, 880c, 890c.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

PENNSYLVANIA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
PHILADELPHIA—Continued. Philadelphia Textile School ----- Chemical laboratory, E. C. Bertolet. Colorimetry laboratory, R. S. Cox. Design laboratory, B. C. Algeo. Physical laboratory, E. W. France. University of Pennsylvania ----- Chemistry and chemical engineering laboratory, Hiram S. Lukens. Civil engineering laboratory, F. P. Witmer. Electrical engineering laboratory, Harold Pender. Mechanical engineering laboratory, R. H. Fernald. Milk hygiene laboratory, L. A. Klein. Pathology laboratory, E. L. Stubbs. Pharmacology laboratory, Carl F. Schmidt. Physiological chemistry laboratory, D. Wright Wilson. Physiology laboratory, R. S. Amadon.	230c, 280c, 300acp, 310acp, 320acp, 330acp, 340acp, 360acp, 370acp, 390acp, 800c, 870c. 000abex, 010abc, 020abc, 030c, 040c, 140c, 150c, 160c, 170c, 200ce, 210ce, 220c, 230c, 280c, 290ce, 300cpe, 310cpe, 320cpe, 330cpe, 340cpe, 360cpe, 370cpe, 390cpe, 400c, 470cpe, 480cp, 490cpe, 500cise, 510cpm, 520cipe, 530cip, 540cpe, 550cpe, 560cpe, 570ce, 590cpe, 600cpme, 610cpme, 620cpme, 630cpme, 640cpme, 650cpme, 660cpme, 680cpme, 690cpme, 700ise, 710se, 720se, 740ipse, 750ipse, 760ipse, 770ips, 780ipse, 790ipse, 800cpe, 810bctep, 820cpe, 830cpe, 840cp, 860cpm, 870cp, 880cp, 890cpe, 910isepe, 920c, 970cp.
PITTSBURGH: Carnegie Institute of Technology ----- Automotive laboratory, S. B. Ely. Bacteriological laboratory, H. L. Lang. Chemical engineering laboratory, W. R. Work. Heat treatment laboratory, John Blackhall. Hydraulic and materials testing laboratory, F. M. McCullough. Industrial chemistry laboratory, J. H. James. Mechanical engineering laboratory, W. Trinks. Mining and metallurgical engineering laboratory, R. H. Mehl. Physics laboratory, H. S. Hower. Plumbing, heating, ventilating, and welding laboratories, C. L. Humphreys. University of Pittsburgh ----- Chemical laboratory, A. Silverman. Civil engineering laboratory, L. C. McCandliss. Electrical engineering laboratory, H. C. Dyche. Industrial chemistry laboratory, H. C. Bashioum. Mechanical laboratory, John Dent. Metallurgical laboratory, S. L. Goodale. Mining laboratory, R. M. Black. Oil and gas laboratory, H. C. George. Physics laboratory, A. G. Worthing.	010bc, 020bc, 030bc, 040bc, 050c, 060c, 070c, 090bc, 100c, 110c, 120bc, 130bc, 140bc, 170bc, 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, 600acmphis, 610acmphis, 620acmphis, 630acmp, 640acmp, 650acmp, 680acmp, 690acmp, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 800bc, 810bc, 820c, 830c, 840acps, 850c, 860c, 870c, 880bc, 890c, 910sp, 970c. 010c, 020bc, 040c, 090c, 100c, 110c, 130c, 140c, 160c, 170bc, 410cp, 420p, 470p, 500alschp, 510cp, 520a, 530cph, 600cp, 610p, 620c, 630acep, 640acep, 650acep, 680c, 690acep, 700s, 710cps, 720s, 750sap, 800c, 810c, 820c, 830c, 840ca, 850c, 860c, 870c, 880bc, 890c, 910sp, 950p.
STATE COLLEGE: Pennsylvania State College ----- Agricultural laboratory, R. L. Watts. Chemical and physical laboratory, Frank C. Whitmore. Engineering laboratory, R. L. Sackett. Mineral industries laboratory, Edward Steidle.	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, 420p, 500hlpe, 510cp, 520cp, 530cphx, 540pcix, 550i, 560ia, 570cp, 590cp, 600chmpe, 610cpm, 620cpm, 630cpm, 640cpm, 650cehpm, 660cpm, 680cehpm, 690cehpm, 700psh, 710ps, 720s, 730s, 740s, 750s, 760s, 780s, 790selp, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880cb, 890c, 910s, 920s, 930s, 970s.
SWARTHMORE: Swarthmore College ----- Civil engineering laboratory, Scott B. Lilly. 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.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

PENNSYLVANIA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
VILLANOVA: Villanova College----- Anatomical and biological laboratory, J. A. Dougherty. Chemical and physiological laboratory, Eli Duncombe. Electrical testing laboratory, William Slavin. General physics laboratory, J. J. Crawford. Magnetic and electric laboratory, C. A. McGeehan. Mechanical laboratory, J. Stanley Morehouse. Organic chemistry laboratory, Robert Fitzgerald. Serology laboratory, J. M. Dougherty.	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—Agricultural Experiment Station. Agronomy laboratory, N. B. Mendiola. Animal husbandry laboratory, B. M. Gonzalez. Biochemical laboratory, F. O. Santos. Chemistry experiment station, F. T. Adriano. Entomology laboratory, L. B. Uichanco. Fiber tests laboratory, V. C. Aldaba. Physico-chemical laboratory, V. G. Lava. Plant pathology laboratory, G. O. Ocfemia. Plant physiology laboratory, R. B. Espino. Rural engineering laboratory, M. A. Roa. Sugar laboratory, M. L. Roxas. Veterinary science laboratory, G. San Agustin.	000s, 010c, 020bc, 040c, 050b, 090bc, 100bc, 110bc, 120bc, 130c, 140cp, 150c, 160cp, 170cp, 210c, 220c, 230c, 240bc, 250bc, 260bc, 280bc, 290- bc, 320apc, 330apc, 340apc, 390apc, 510c, 530c, 570c, 850c, 870c, 890c, 910ach, 990c.
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PUERTO RICO

RIO PIEDRAS: University of Puerto Rico----- Biology laboratory. Chemistry of foods laboratory. Engineering laboratory. Sugar chemistry laboratory.	010bc, 020bc, 030bc, 040bc, 120bc, 130bc, 140bc, 150bc, 160c, 290bc, 410p, 500c, 510p, 600cp, 620cp, 630cp, 640cp, 650cp, 680cp, 690cp, 850c.
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RHODE ISLAND

KINGSTON: Rhode Island State College----- Chemical laboratory, J. W. Ince. Civil engineering laboratory, S. H. Webster. Electrical and physics laboratory, William Anderson. Mechanical laboratory, R. L. Wales.	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. Geology laboratory, Charles W. Brown. Physics laboratory, Albert De F. Palmer.	000abct, 010abct, 020abct, 030abct, 040abc, 060p, 140abc, 170abct, 300aspb, 310aspb, 320aspb, 330aspb, 340aspb, 350asp, 360asp, 370asp, 380asp, 390asp, 400pasb, 410pasb, 420pasb, 430pasb, 440pasb, 450pasb, 460pasb, 470pasb, 480ps, 490ps, 500amp, 510amp, 520amp, 530amp, 540amp, 550amp, 580amp, 590amp, 600amp, 610amp, 620amp, 630amp, 640amp, 650amp, 680amp, 690amp, 700s, 710s, 720s, 730s, 740s, 750s, 760s, 770s, 780s, 790s, 810abct, 880abct, 910sp, 970sp.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

SOUTH CAROLINA

Location and name of laboratory	Commodities and nature of tests ¹
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, 610cips, 630c, 640c, 650c, 680c, 690c, 710s.
CLEMSON COLLEGE: Clemson Agricultural College----- Agricultural engineering laboratory, G. B. Nutt. Botany and bacteriology laboratory, W. B. Aull. Chemical laboratory, B. F. Robertson. Civil engineering laboratory, E. L. Clarke. Electrical laboratory, S. R. Rhodes. Engineering experiment station laboratory, S. B. Earle. Geology and mineralogy laboratory, F. H. H. Calhoun. Mechanical laboratory, B. E. Fernow. Research laboratory, H. W. Barre. Textile laboratory, H. H. Willis.	020abc, 100c, 110c, 120c, 160b, 170bc, 260c, 280c, 300aip, 310aip, 320aip, 330aip, 390aip, 410p, 500ac, 510p, 520c, 530ip, 540ip, 550ip, 560ip, 570ip, 590ipc, 600acp, 610acp, 620ac, 630ac, 640ac, 650ac, 680ac, 690ac, 730s, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880cb, 890c..
COLUMBIA: University of South Carolina----- Biological laboratory, W. E. Hoy. Chemical laboratory, G. F. Lipscomb. Electrical engineering laboratory, T. F. Ball. Geology laboratory, Stephen Taber. Pharmacy laboratory, E. T. Motley. Physics laboratory, A. C. Carson. Strength of materials laboratory, W. E. Rowe.	000b, 020c, 030b, 040cp, 050b, 070b, 110c, 120b, 130b, 140c, 150c, 160c, 170cp, 240b, 260c, 290b, 400b, 410pb, 430cp, 510cp, 530c, 540c, 550c, 570c, 590c, 710s, 800cp, 820cp, 970cp.
GREENVILLE: Furman University----- Biological laboratory, S. A. Ives. Chemical laboratory, J. R. Sampey, Jr. Physical laboratory, H. T. Cox.	000ab, 040ac, 090a, 120a, 140ac, 160ac, 240a, 290a, 340a, 600c, 640c, 650c, 830c.
SPARTANBURG: Wofford College----- Biological laboratory, C. B. Waller. Chemical laboratory, C. B. Waller. Electrical laboratory, E. H. Shuler. Mineralogy laboratory, C. S. Pettis. Physics laboratory, C. S. Pettis.	710s (motors, generators, small), 850c, 880c.

SOUTH DAKOTA

BROOKINGS: South Dakota State College----- Animal health laboratory, C. C. Lipp. Bacteriology laboratory, Ernest Walker. Botanical laboratory, W. L. Miller. Cement concrete testing laboratory, H. S. Carter. Chemical laboratory, K. W. Franke. Dairy products laboratory, T. M. Olsen. Drug assay laboratory, E. R. Serles. Electrical machinery laboratory, H. M. Crothers. Fuel and steam laboratory, J. T. Strate. Nutrition laboratory, Minerva Kellogg. Seed testing laboratory, A. N. Hume. Textile laboratory, Jeanette Ross. Zoology and entomology laboratory, H. C. Severin.	000p, 010cb, 020cb, 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.
RAPID CITY: South Dakota School of Mines----- Chemical laboratory, Andrew Karsten. Civil engineering laboratory, E. D. Dake. Electrical laboratory, J. O. Kammerman. Metallurgical laboratory, Bancroft Gore. Mining experiment station laboratory, Charles Bentley. Mining laboratory, F. C. Lincoln. Physics laboratory, C. G. Watson.	410p, 500cph, 510cp, 600cpm, 620cpm, 630cpm, 640cpm, 650cpm, 680cpm, 690cpm, 700s, 710s, 820c, 830c, 880c, 910s.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

SOUTH DAKOTA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
VERMILION: University of South Dakota----- Department of chemistry laboratory, Arthur M. Pardee. Electrical engineering laboratory, B. B. Brackett. Physical and mechanical testing laboratory, M. W. Davidson. Physics laboratory, J. W. Jordan. State chemical laboratory, Guy C. Frary. State geological survey laboratory, E. P. Rothrock. State health laboratory, J. C. Ohlmacher.	000b, 010bc, 020b, 030b, 040c, 050b, 060p, 090cb, 100c, 110c, 120b, 130c, 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, 840c, 850c, 870c, 880cb, 890c, 910s, 980p.

TENNESSEE

KNOXVILLE: University of Tennessee----- Bacteriology laboratory, Paul W. Allen. Chemistry engineering laboratory, R. M. Boarts. Civil engineering laboratory, N. W. Dougherty. Electrical laboratory, J. G. Tarboux. Engineering experiment station laboratory, C. A. Perkins. Hydraulic laboratory, J. A. Switzer. Materials testing laboratory, H. B. Aikin. Mechanical laboratory, W. R. Woolrich. Physics laboratory, K. L. Hertel.	000b, 010b, 020b, 400p, 410p, 510p, 530p, 600p, 610p, 640p, 880b.
MARYVILLE: Maryville College----- Biology laboratory, Susan A. Green. Chemistry laboratory, George D. Howell. Physics laboratory, George A. Knapp.	170ac.
NASHVILLE: Vanderbilt University----- Analytical laboratory, F. L. Conover. Engineering laboratory, Fred J. Lewis. Geological laboratory, W. B. Jewel. Industrial laboratory, J. M. Breckenridge. Metallurgy laboratory, W. P. Fishel. Organic laboratory, A. W. Ingersoll. Physical laboratory, L. J. Bircher.	410p, 470c, 500chip, 510chap, 530chp, 540acp, 550acp, 560a, 570ch, 590acp, 600chmp, 610chm, 620ch, 630chm, 640chm, 650chmp, 680chm, 690chm, 710s, 840cs, 850c, 860c, 870c, 880c, 890c, 910s.

TEXAS

AUSTIN: University of Texas----- Engineering experiment station, S. P. Finch. Industrial chemistry experiment station, E. P. Schoch.	500hl, 510cp, 530cp, 700s, 710s, 820c, 830c, 880cb, 910s.
BELTON: Baylor College----- Biology and botany laboratories, Lucile Capt. Chemistry laboratory, A. T. Bawden. Nutrition laboratory, Lucile Wooten. Physics laboratory, E. A. White. Textile laboratory, Lee Hamilton.	000ab, 010abc, 020abc, 030abc, 040abc, 050abc, 060abc, 070abc, 090abc, 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, 400abc, 410abc, 420abc, 430abc, 470abc, 480abc, 490abc, 500abc, 510abc, 520abc, 530abc, 540abc, 550abc, 560abc, 570abc, 590abc, 600abcp, 610abcp, 620abcp, 630abcp, 640abcp, 650abcp, 660abcp, 670abcp, 680abcp, 690abcp, 800ca, 810ca, 820ca, 830ca, 840ca, 850ca, 860ca, 870ca, 880ca, 890ca, 910as, 970ca.
BROWNWOOD: Howard Payne College----- Chemical laboratory, O. E. Winebrenner.	500cp, 510cp, 530cp, 540cp, 550cp, 570cp, 590cp, 600cm, 620cm, 630cm, 640cm, 650cm, 680cm, 690cm, 800cpba, 810cpba, 820cpba, 830cpba, 850cpba, 870cpba, 880cpba, 890cpba.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

TEXAS—Continued

Location and name of laboratory	Commodities and nature of tests ¹
COLLEGE STATION:	
Agricultural and Mechanical College of Texas----- Agricultural engineering laboratory, D. Scoates. Agricultural experiment station, A. B. Conner. Biology laboratory, O. M. Ball. Chemistry and chemical engineering laboratory, C. C. Hedges. Civil engineering laboratory, J. J. Tichey. Electrical engineering laboratory, M. C. Hughes. Engineering experiment station, F. E. Giesecke. Geology laboratory, J. H. Hance. Mechanical engineering laboratory, C. W. Crawford. Physics laboratory, O. W. Silvey. State chemist laboratory, G. S. Fraps. Textile engineering laboratory, J. B. Bagley. Wool laboratory, J. M. Jones.	010cb, 020cb, 030c, 040c, 050c, 090c, 100c, 110c, 120c, 130c, 140c, 150c, 160c, 170c, 240c, 300p, 360cp, 390cp, 410p, 500cpl, 510cp, 530cph, 600cp, 610cp, 700p, 710pe, 720p, 730p, 740p, 770p, 780p, 800cp, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
GEORGETOWN:	
Southwestern University----- Biology laboratory, J. B. Moorman. Chemical laboratory, J. C. Godbey. Geology laboratory, R. W. Tinsley. Physics laboratory, R. V. Guthrie.	510c, 530c, 570c, 630c, 650c, 680c.
HOUSTON:	
The Rice Institute----- Biology laboratory, A. C. Chandler. Chemistry laboratory, H. B. Weiser. Civil engineering laboratory, L. B. Lyon. Electrical engineering laboratory, J. S. Waters. Industrial chemistry laboratory, A. J. Hartsook. Mechanical laboratory, J. H. Pound. Physics laboratory, H. A. Wilson.	020cp, 140cp, 160cp, 170cp, 410p, 500chl, 510cp, 530cps, 540c, 570c, 600cpm, 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----- Biological laboratory, R. A. Studhalter. Chemical laboratory, R. C. Goodwin. Electrical laboratory, C. V. Bullen. Geology laboratory, Leroy T. Patton. Materials testing laboratory, J. H. Murdough. Physical laboratory, E. F. George. Textile laboratory, C. D. Brandt.	020b, 040c, 100c, 110c, 140c, 160c, 300aips, 310p, 500ac, 510cpa, 520ac, 530a, 540a, 550a, 560a, 570ac, 590ac, 600achmp, 610cpe, 620cpe, 630apcme, 640apcme, 650ce, 680ce, 690c, 700hps, 710c, 750s, 800ce, 820ce, 840a, 850c, 880c, 910p.
WACO:	
Baylor University----- Botanical laboratory, Edward N. Jones. Chemical laboratory, W. T. Gooch, W. R. Stephens. Physiology laboratory, G. E. Potter.	000t, 010t, 020t, 140cp, 150ac (condi- ments), 300a, 310a, 400ab, 430a, 500cp, 510p, 530cp, 810ca (pharma- ceutical), 850c, 880cb (water treat- ments).
WAXAHACHIE:	
Trinity University----- Biology laboratory, F. B. Isely. Chemistry laboratory, J. B. Ford. Home economics laboratory, Estelle Griswold. Physics laboratory, J. Kennedy.	020c, 100c, 140c, 150c, 170c, 500c, 510c, 530c, 570c, 640c, 690c, 810c, 890c.

UTAH

SALT LAKE CITY:	
University of Utah----- Bacteriology and pathology laboratories, L. L. Daines. Chemistry laboratory, W. D. Bonner. Electrical engineering laboratory, A. L. Taylor. Geology and mineralogy laboratories, F. J. Pack. Home economics laboratory, Rose H. Widtsoe. Mechanical engineering laboratory, E. H. Beckstrand. Metallurgy and ore-dressing laboratories, S. F. Ravitz. Mining laboratory, R. S. Lewis. Physics laboratory, Orin Tugman.	010c, 020c, 030c, 040cp, 100c, 110cp, 120c, 130c, 140cp, 150c, 160cp, 170cp, 280c, 300c, 370c, 410ps, 500achmp, 510acp, 530a, 540a, 550a, 560a, 570acm, 590acm, 600cpm, 610cpm, 620acpm, 630acpm, 640acpm, 650acpm, 660acpm, 680acpm, 690acpm, 700ps, 710ps, 740ps, 750ps, 800c, 810c, 820c, 830c, 840c, 850c, 870c, 880c, 890c, 910s.

¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

VERMONT

Location and name of laboratory	Commodities and nature of tests ¹
BURLINGTON: University of Vermont----- Agricultural experiment station laboratory, J. L. Hills. Botany laboratory, G. P. Burns. Chemical laboratory, G. H. Burrows. Dairy products testing laboratory, J. L. Hills. Materials testing laboratory, L. B. Puffer. Mechanical engineering laboratory, W. T. Fulton. Mineralogical and geological laboratory, F. C. Jacobs. Pathological laboratory, E. H. Buttles. Physiological laboratory, F. K. Jackson. State laboratory of hygiene, C. F. Dalton. Zoology laboratory, H. F. Perkins.	000b, 010bc, 020bc, 100c, 140apc, 240c, 250ap, 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.
MIDDLEBURY: Middlebury College----- Biological laboratory, Raymond L. Barney. Chemical laboratory, P. Conant Voter. Geological and mineralogical laboratory, Phelps N. Swett. Physical laboratory, Ernest C. Bryant.	020bepa, 090c, 160ct, 170ct, 200c, 230c, 300cb, 360cb, 470ca, 500c, 510c, 520c, 530c, 540c, 550c, 560c, 570c, 590c, 600cm, 610cm, 620cm, 630cm, 640cm, 650cm, 660cm, 680cm, 690cm, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880c, 890c.
NORTHFIELD: Norwich University----- Chemical laboratory, S. F. Howard. Civil engineering laboratory, C. S. Carleton. Electrical laboratory, F. A. Spencer. Mechanical laboratory, W. D. Emerson.	400p, 410p, 500cp, 510cp, 600ap, 610ap, 700s, 710s.
WINOOSKI: St. Michael's College----- Biological laboratory, C. A. Dodge. Chemical laboratory, George F. Ward. Physical laboratory, A. A. Rivard.	100c, 020c, 040c, 120c, 130c, 150c, 160c, 260c, 280c, 500pc, 570c, 590c, 600c, 630c, 640c, 650c, 680c, 690c, 800c, 820c, 830c, 840c, 850c, 870c, 880cb, 890c, 970pc.

VIRGINIA

BLACKSBURG: Virginia Polytechnic Institute----- Aeronautical laboratory, N. E. Conner. Agricultural chemistry laboratory, W. B. Ellett. Agricultural engineering laboratory, C. E. Seitz. Agricultural experiment station, A. W. Drinkard. Animal pathology laboratory, I. D. Wilson. Ceramic laboratory, J. W. Whittemore. Chemical engineering laboratory, J. W. Watson. Concrete materials laboratory, W. T. Hartman, Jr. Dairy husbandry laboratory, C. W. Holdaway. Electrical engineering laboratory, C. Lee. Engineering experiment station, E. B. Norris. Engineering materials laboratory, L. O'Shaughnessy. Geology and mineralogy laboratory, R. J. Holden. Highway materials laboratory, R. B. H. Begg. Lubrication laboratory, J. I. Clower. Mechanical engineering laboratory, J. B. Jones. Metallurgy laboratory, W. E. Barlow. Mining laboratory, O. C. Burkhart. Physics laboratory, F. L. Robeson. Plant pathology laboratory, S. A. Wingard. Sanitary engineering laboratory, F. J. Sette. Soils and crops laboratory, T. B. Hutcheson.	000b, 010bc, 020bc, 040cl, 100bc, 110c, 120c, 130c, 140cl, 150c, 160c, 170c, 230c, 240c, 250i, 260abc, 280cs, 290cb, 300ac, 310ac, 370ac, 410p, 500chps, 510acp, 520acp, 530phc, 550a, 570c, 590ac, 600cmp, 610cmp, 620cmp, 630cmp, 640cmp, 650cmp, 680cmp, 690cmp, 700ps, 710eps, 730s, 760s, 800c, 810c, 820c, 830c, 840c, 850c, 860c, 870c, 880bcs, 890c, 910ps.
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¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

VIRGINIA—Continued

Location and name of laboratory	Commodities and nature of tests ¹
CHARLOTTESVILLE: University of Virginia----- Anatomical laboratory, R. B. Bean. Astronomical observatory, S. A. Mitchell. Bacteriological and pathological laboratories, Jas. R. Cash. Biochemical laboratory, A. Chanutin. Biological laboratory, I. F. Lewis. Chemical laboratory, A. F. Benton. Clinical laboratory, W. E. Bray. Electrical engineering laboratory, J. M. Miller, Jr. Embryological and histological laboratories, H. E. Jordan. Experimental engineering laboratory, Charles Henderson. Geological laboratory, Wilbur A. Nelson. Pharmacological laboratory, J. A. Waddell. Physical laboratory, L. G. Hoxton. Physiological laboratory, Sidney W. Britton.	040p, 140p, 170c, 260c, 300cp, 320cp, 330cp, 340cp, 360cp, 370cp, 390cp, 400p, 410p, 470p, 480p, 490p, 500cp, 510cp, 530cp, 570c, 590c, 600cp, 610cp, 620c, 630c, 640cp, 650c, 680c, 690c, 700s, 820c, 830c, 850c, 860c, 880c, 890c.
LEXINGTON: Virginia Military Institute----- Biological laboratory, R. P. Carroll. Chemical laboratory, W. O. Swan. Electrical laboratory, S. W. Anderson. Highway and building materials testing laboratory, J. A. Anderson. Mineralogical laboratory, Edward Steidtmann. Physics laboratory, Francis Mallory. Washington and Lee University----- Biological laboratory, W. D. Hoyt. Chemical laboratory, J. L. Howe. Civil engineering laboratory, H. Houston. Electrical laboratory, R. W. Dickey. Geological laboratory, M. H. Stow. Physical laboratory, R. W. Dickey.	410p, 500p, 510p, 600p, 610p, 620p, 640p. 510ap, 710es.
WILLIAMSBURG: College of William and Mary----- Biological laboratory, D. W. Davis. Chemical laboratory, R. G. Robb. Physical laboratory, R. C. Young.	020cab, 140c, 160c, 300c, 500chp, 550p, 600c, 630p, 640ce, 680c, 690c, 700ps, 710ps, 800c, 820c, 830c, 850c, 880bc, 890c, 910s.

WASHINGTON

PULLMAN: State College of Washington----- Agricultural engineering laboratory, L. J. Smith. Agronomy laboratory, E. G. Shafer. Animal husbandry laboratory, Howard Hackedorn. Automotive laboratory, G. R. Sayles. Bacteriology laboratory, Victor Burke. Botanical laboratory, F. L. Pickett. Cereal nursery laboratory, E. F. Gaines. Chemical laboratory, C. C. Todd. Chemistry laboratory—Agricultural Experiment Station, J. L. St. John. Civil engineering laboratory, F. W. Welch. Commercial assaying laboratory. Concrete laboratory, Jas. G. McGivern. Dairy industry laboratory, H. A. Bendixen. Electrical engineering laboratories, R. D. Sloan. Electronics laboratory, H. F. Lickey. Engineering experiment station laboratory, H. V. Carpenter. Entomology laboratory, R. L. Webster. Forest products laboratory, E. H. Steffen. Fuels laboratory, F. W. Candee. Gas power laboratory, H. H. Langdon. Home economics laboratory, Florence Harrison. Hydraulic and highway engineering laboratories, H. E. Phelps. Lubrication laboratory, H. H. Langdon. Machine shop, H. H. Montgomery. Mechanical engineering laboratories, H. H. Langdon.	000a, 010bes, 020abes, 030b, 040c, 090bc, 100abc, 110abc, 120abc, 130abc, 140ach, 150ach, 160ach, 170ach, 210ach, 220ch, 240abi, 250ab, 260c, 280a, 290ach, 300ab, 320b, 330b, 340b, 400abp, 410bp, 500achpsi, 510ap, 530ahipse, 540ap, 550ap, 560ap, 570aisp, 590acp, 600ahimps, 610ahimps, 620ahimpc, 630acips, 640achimp, 650achips, 660ahips, 680acips, 690acipsm, 700hlp, 710hpse, 720as, 730aps, 740i, 750i, 800acht, 810acht, 820acht, 830acht, 850c, 870ac, 880bc, 890acht, 910s, 950c.
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¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

WASHINGTON—Continued

Location and name of laboratory	Commodities and nature of tests ¹
PULLMAN—Continued. State College of Washington—Continued. Mineralogical laboratory, H. E. Culver. Mining laboratory, A. E. Drucker. Pharmacy laboratory, P. H. Dirstine. Photometric laboratory, H. F. Lickey. Physics laboratory, P. A. Anderson. Plant pathology laboratory, F. D. Heald. Poultry department laboratory, J. S. Carver. Radio-electricity laboratory, H. V. Carpenter. Soils laboratory, S. C. Vandecaveye. Steam laboratory, F. W. Candee. Strength of materials laboratory, Jas. G. McGivern. Veterinary laboratory, E. E. Wegner. Water analysis laboratory, W. E. Bradt. Zoology laboratory, R. F. McLennan.	
SEATTLE: University of Washington----- Aeronautical, civil, electrical, and mechanical engineering laboratories, R. G. Tyler. Chemistry and chemical engineering laboratory, H. K. Benson. Fisheries laboratory, William F. Thompson. Forestry laboratory, Hugo Winkenwerder. Mining, metallurgical, and ceramics laboratory, Milnor Roberts. Pharmaceutical, drug laboratory, Charles W. Johnson. Physics laboratory, Henry L. Brakel.	020c, 030cb, 040cp, 060c, 090cp, 100cb, 110cb, 120cb, 130cb, 140c, 150c, 160c, 170c, 200c, 210cs, 220c, 230cp, 250i, 260c, 280cs, 290cb, 300c, 310c, 360c, 370c, 400i, 410ps, 420p, 430p, 470psc, 500chl, 510pc, 520pc, 530pc, 540p, 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.

WEST VIRGINIA

MORGANTOWN: West Virginia University----- Agricultural chemistry laboratory, R. B. Dustman. Biochemistry laboratory, M. A. Lafferty. Dairy laboratory, H. O. Henderson. Department of chemistry laboratory, Friend E. Clark. Electrical laboratory, A. H. Forman. Engineering chemistry laboratory, William Hodge. Entomology laboratory, L. M. Peairs. Experimental engineering laboratory, J. B. Grumbein. Feeds and fertilizer laboratory (at Charleston), T. B. Leith. Mechanical laboratory, L. L. Amidon. Plant pathology laboratory, C. R. Orton. Seeds laboratory.	020p, 100p, 110c, 130c, 240p, 250i, 260t, 410p, 500et, 510pc, 520c, 530c, 570c, 590t, 600cpm, 610cpm, 620cpm, 630cpm, 640cpm, 650cpm, 660cpm, 680cpm, 690cpm, 700s, 720s, 750s, 800cp, 810cp, 870cp, 880cp.
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WISCONSIN

APPLETON: Institute of Paper Chemistry----- Colloid chemistry laboratory, B. W. Rowland. Fibre microscopy laboratory, John Graff. Organic chemistry laboratory, H. F. Lewis. Physics laboratory, J. A. Van den Akker. Pulp and paper testing laboratory, H. W. Morgan. Lawrence College----- Botany laboratory, W. E. Rogers. Chemical laboratory, S. F. Darling. Geology and mineralogy laboratory, David Delo. Physics laboratory, J. S. Millis. Zoology laboratory, R. C. Mullenix.	280acp, 340c (straw), 360ac (wool), 400cp (logs), 470acp, 490acp, 530acp, 640acp (copper alloys), 680acp (zinc alloys), 710ips, 780ips, 910ips, 950cp. 470cp, 490cp, 570c (sulphur), 630c (antimony), 640c (copper alloys), 680c (tin and zinc alloys).
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¹ See pp. 1 and 2 for symbolic references.

GEOGRAPHICAL LISTING OF COLLEGES—Continued

WISCONSIN—Continued

Location and name of laboratory	Commodities and nature of tests ¹
MADISON: University of Wisconsin----- Agricultural bacteriology laboratory, E. B. Fred, W. D. Frost. Agricultural chemistry laboratory, E. B. Hart, W. H. Peterson. Chemical engineering laboratory, O. L. Kowalke. Dairy science laboratory, H. C. Jackson. Drainage laboratory, E. R. Jones. Electrical engineering laboratory, E. Bennett. Feeds and fertilizer laboratory, Walter Griem. Food and nutrition laboratory, Helen T. Parsons. Forest products laboratory, C. P. Winslow. Hydraulic laboratory, F. M. Dawson. Materials testing laboratory, M. O. Withey. Mechanical engineering laboratory, G. L. Larson. Mining and metallurgy laboratory, R. S. Caffery. Seed-testing laboratory, A. L. Stone. Soils laboratory, C. J. Chapman. Textile laboratory, Miss Cecelia Abry, Mrs. Julia Nofsker. Veterinary science laboratory, F. B. Hadley.	000p, 010b, 020bc, 030b, 040b, 060a, 100c, 110c, 240cs, 290p, 300acp, 310acp, 320acp, 360acp, 370acp, 390acp, 400p, 410p, 470a, 500c, 510p, 530p, 570p, 590cp, 600cmp, 610cmp, 620cmp, 630cmp, 640cmp, 650cmp, 660cmp, 680cmp, 690cmp, 700s, 710s, 720s, 750s, 780s, 790s, 820c, 830c, 880c, 890c, 910s.
MILWAUKEE: Marquette University----- Anatomy laboratory, Eben J. Carey. Biochemistry laboratory, Joseph C. Bock. Electrical laboratory, Franz A. Kartak. Materials laboratory, Emory D. Roberts. Metallurgical laboratory, John E. Schoen. Pharmacology laboratory, Harry Beckman.	000abxc, 020c, 040c, 140c, 160c, 170c, 510p, 600pm, 620pm, 630pm, 640pm, 650pm, 680pm, 690pm, 710es, 870c, 910is.
WYOMING	
LARAMIE: University of Wyoming----- Agriculture laboratory, C. H. Gilbert. Assaying laboratory. Botany laboratory, W. G. Solheim. Chemistry laboratory, O. A. Beath. Egg laboratory, Mack O. North. Engineering laboratory, R. D. Goodrich. Farm crops laboratory, Glenn Hartman. General chemistry instruction laboratory, P. T. Miller. Geological and mineralogical laboratory, S. H. Knight. Home economics laboratory, Elizabeth J. McKittrick. Metabolism laboratory, Elizabeth J. McKittrick. Physics laboratory, P. F. Hammond. Plant pathology laboratory, G. H. Starr. Psychology laboratory, Lillian Portenier. Seeds laboratory, L. E. Walter. Soils laboratory, T. J. Dunnewald. State chemist, L. E. Walter. Veterinary and animal pathology and bacteriology laboratory, A. M. Lee. Wool and fur laboratory, R. H. Burns. Zoology and parasitology, John W. Scott.	000bct, 010abc, 020abc, 030abc, 040aci, 070acips, 090abc, 100abct, 110abct, 120abct, 130abct, 140abct, 150abct, 160abct, 170abct, 220ac, 240abcips, 250abcip, 290abc, 300ac, 310ac, 320a, 330a, 340a, 360acips, 370a, 390a, 400p, 410p, 500c, 510acip, 520acep, 530acep, 540ac, 550ac, 570ac, 590ac, 600cmp, 610cmp, 620cmp, 630cmp, 640c, 650c, 660c, 710s, 810abc, 830ct, 840c, 850abcps, 880c, 890c, 970c.

¹ See pp. 1 and 2 for symbolic references.

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 more than 555 lists of such firms as have expressed to the Bureau (up to August 1, 1936) their desire to have their name placed on the list of manufacturers willing, when requested to do so, to certify to purchasers that material supplied in accordance with the designated Federal specifications and commercial standards 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.

SUMMARY OF FEDERAL SPECIFICATIONS AND COMMERCIAL STANDARDS TO WHICH THE CERTIFICATION PLAN HAS BEEN APPLIED

Group symbol	Commodity groups	Number of lists
C	Animal products.....	4
H	Brooms and brushes.....	50
J	Cable and wire.....	3
M	Ceramics.....	1
N	Cereals and products.....	1
O	Chemicals.....	14
P	Cleaning and polishing materials.....	23
Q	Coal and products.....	1
R	Coal-tar and products.....	7
T	Cordage.....	8
U	Drugs and medicines.....	1
W	Electric apparatus.....	9
AA	Furniture.....	9
DD	Glass and glassware.....	2
FF	Hardware.....	11
GG	Instruments.....	12
HH	Insulating materials.....	34
JJ	Knit goods, netting, and webbing.....	1
KK	Leather and leather goods.....	4
MM	Lumber and timber.....	2
OO	Machinery.....	1
QQ	Metals.....	57
RR	Metal products.....	4
SS	Minerals and products (nonmetallic).....	32
TT	Paints, pigments, varnishes, and products.....	39
UU	Paper and products.....	36
VV	Petroleum and products.....	21

SUMMARY OF FEDERAL SPECIFICATIONS AND COMMERCIAL STANDARDS TO WHICH THE CERTIFICATION PLAN HAS BEEN APPLIED—Continued

Group symbol	Commodity groups	Number of lists
WW	Pipe, pipe-fittings, plumbing-fixtures, tubes, and tubing (metallic).	26
ZZ	Rubber and rubber goods	2
AAA	Scales	2
CCC	Textiles (yardage)	20
DDD	Textile products	22
GGG	Tools	41
JJJ	Vegetable products	4
LLL	Wood products	6
CS	Commercial standards	45
	Total	555

For the purpose of securing economy in the procurement of material used by the Government, the Federal Specifications Executive Committee makes a strenuous effort to formulate such specifications as will cover commercial materials and supplies. Before the specifications are promulgated as official Federal specifications for the use of the departments and establishments of the Government, comments and criticisms from the manufacturers and interested agencies are given careful consideration. A list of the specifications thus far adopted by the committee is given in section IV, part 1, of the Federal Standard Stock Catalog, which can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents.

Among the duties assigned to the committee 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 Executive Committee broadens 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 Federal specifications serves 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 Federal 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, including commercial standards formulated under the auspices of the National Bureau of Standards by interested cooperating agencies. The application of the plan is 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.

NATIONAL BUREAU OF STANDARDS PUBLICATIONS ON TESTING

(Continued from p. 2 of cover)

- Rope, wire hoisting, nondestructive testing of, by magnetic analysis, T315. Price 10c.
- Rubber goods, testing of, C38. Price 20c.
- Scale, calibration of a divided, C329. Price 10c.
- Scales, large capacity, method for precision tests of, T199. Price 5c.
- Shear tests of reinforced brick masonry beams, RP504. Price 5c.
- Shear tests of reinforced concrete beams, T314. Price 50c.
- Soap, specifications for the method of testing, C62. Price 5c.
- Some vulcanization tests of Guayule rubber, T353. Price 5c.
- Standard bending tests for rope yarn, development of a, T300. Price 10c.
- *Sugars, influence of atmospheric conditions in the testing of, S221.
- Supplies, miscellaneous, including paints and paint materials, inks, lubricating oils, soaps, etc., some technical methods of testing, M15. Price 15c.
- Tanning materials, synthetic, analysis of, T316. Price 10c.
- Tapes, measuring, testing of, at the Bureau of Standards, C328. Price 10c.
- Tests of a balanced thermocouple and filter radiometer as a standard ultraviolet dosage intensity meter, RP450. Price 5c.
- Tests of cellular sheet-steel flooring, RP463. Price 10c.
- Tests of large columns with H-shaped sections, T328. Price 40c.
- Tests of theater-proscenium curtains, RP603. Price 5c.
- *Thermometers, clinical, testing of, S13.
- *Tiles, hollow building, tests of, T120.
- Timepieces, tests of, and measurement of time, C392. Price 15c.
- *Transformer steel, the testing of, S109.
- *Transformers, current, a method for testing, S309.
- *Transformers, instrument, a watt-hour meter method of testing, S233.
- *Transformers, potential, testing, S217.
- *Tubing, gas, tests of flexible, T133.
- Use and testing of sphygmomanometers, T352. Price 20c.
- George Washington Bridge, tests of steel tower columns, RP831. Price 10c.

THIS VOLUME represents a project on the part of the United States 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 1,575 industrial research laboratories, including consulting research laboratories, has been compiled by the National Research Council, Washington, D. C., and published in Bulletin 91, August 1933.

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 willing 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 is given in convenient form in the National Directory of Commodity Specifications, the second revised edition of which has been issued by the National 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 purchase specifications prepared by Federal and other consumer groups, and by technical societies and trade associations. An advisory board was selected by these interested agencies to represent them in supervising the preparation of the Directory.

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

Ten major divisions of the Directory

Commodity groups:	Decimal class
Animal and animal products.....	000
Vegetable food products, oil, seeds, expressed oil, and beverages.....	100
Other vegetable products (except fibers and wood).....	200
Textiles.....	300
Wood and paper.....	400
Nonmetallic minerals.....	500
Ores, metals, and manufactures (except machin- ery and vehicles).....	600
Machinery and vehicles.....	700
Chemicals and allied products.....	800
Miscellaneous.....	900

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, 548, 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 \$1.75.

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), the price is \$2.10.