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THE RESULTS OF PHYSICAL TESTS OF ROAD-BUILDING ROCK IN 1916 AND 1917.

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This bulletin supersedes United States Department of Agriculture Bulletin 537 and supplements Bulletin 370, which gives the results of the more common physical tests of some 3,650 road-building rock samples, examined prior to January 1, 1916. Tests of 655 additional samples examined in 1916 and 1917 are recorded in Table I, the rocks being classified as to their location. It will be noted that in a number of cases, in addition to other tests, the crushing strength of the rock also is given. This test is not made ordinarily when examining rock to determine its suitability for use in the various types of broken-stone roads, but is employed often when considering a rock for use in the manufacture of paving block or as railroad ballast. Table II gives a complete record of all of the crushing strength tests made by the office prior to January 1, 1916. A brief description of this test as made by the office follows.

CRUSHING STRENGTH OR COMPRESSION TEST.

This test is made upon a cylindrical test specimen 2 inches in diameter and 2 inches high. Both ends of the specimen, which have been sawed at right angles to the axis of the cylinder, and properly faced, are bedded in plaster of Paris. The cylinder then is crushed in a 200,000-pound universal testing machine. A small 2-inch spherical bearing block is placed between the moving head of the machine and the upper surface of the specimen. The average of at least two determinations is reported as the crushing strength, calculated in pounds per square inch. Crushing strength tests are made upon samples of road-building rock only when specifically requested.

The percentage variation in strength of 153 granites and gneisses and 156 limestones and dolomites, the total number of these types of rock tested up to January 1, 1918, is shown graphically in Figure 1. In this chart the percentage of total samples tested having various values for crushing strength are plotted as indicated. As an example, the chart shows that 7 per cent of all granites and gneisses tested have a crushing strength of 21,000 pounds per square inch. The sum of all per cents to the left of the 21,000-pound line totals 50; that is, 50 per cent of all granites and gneisses tested have a crushing strength of less than 21,000 pounds. On the other hand, 7 per cent of all the granites and gneisses show a crushing strength of 20,000 pounds per square inch, and by summing up all the per cents to the right of the 20,000-pound line, it will be seen that 50 per cent of the samples tested have a crushing strength greater than 20,000 pounds per square inch. In other words, the average crushing strength of this type of material lies between 20,000 and 21,000 pounds per square inch. By a similar interpretation, the average crushing strength of limestones and dolomites lies between 18,000 and 19,000 pounds per square inch. Further study of the chart shows that the crushing strength of limestones and dolomites closely approaches that of granites and gneisses.

INTERPRETATION OF RESULTS OF PHYSICAL TESTS.

To interpret the results of the physical tests made of road-building rock, the office has adopted a table of general limiting test values for broken stone for the various types of road construction which is printed on the back of the form for reporting tests. For general reference, these limiting values, together with comments upon limits shown, are given in Table IV. By comparing the results of tests on a sample of rock with the limits shown in the table, a general idea of the types of road construction for which it is best suited may be obtained. Table III contains the total number of rock samples received from the various States which have been tested up to January 1, 1918.

FIG. 1.—Variations in the crushing strength of rock.

TABLE I.—Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918.

ALABAMA.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, pounds per square inch.	Weight per cubic foot.	Absorption, pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Cementing value.
10138	Bridgeport.	Jackson.	Oolitic limestone.	(1)	108	0.21	4.4	9.1	15.7	5	41
9853	Birmingham.	Jefferson.	Limestone.	(1)	103	.55	5.0	8.0	15.3	6	40
11506	Gautts Quarry.	Talladega.	Marble.	(1)	169	.29	5.98	6	9.7	4	(1)

ARIZONA.

11642-A	Tucson (west of)	Pima	Siliceous limestone.	(1)	166	0.48	5.4	7.4	15.5	5	13
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ARKANSAS.

12461	Conway	Faulkner	Ferruginous sandstone.	(1)	159	0.18	2.6	15.4	17.3	25	(1)
9828	Lamar	Johnson.	Feldspathic sandstone.	(1)	139	1.98	(1)	(1)	18.7	13	17
12320		Pulaski.	do.	(1)	162	.96	2.5	16.0	18.9	32	15
11511	Pfeiffer	Independence.	Marble.	(1)	163	1.06	(1)	(1)	14.0	5	(1)
9838	Fort Smith.	Sebastian.	Sandstone.	(1)	130	3.00	6.5	6.2	13.3	6	25
10186	Gillham.	Sewier.	Feldspathic quartzite.	(1)	164	.42	2.3	17.4	19.0	32	(1)

CALIFORNIA.

11373	San Jose.	Santa Clara.	Feldspathic quartzite.	(1)	172	0.32	1.8	22.2	18.7	18	45
11527	San Francisco.	San Francisco.	Marble.	(1)	176	.35	(1)	(1)	12.0	6	(1)

COLORADO.

9821	Lyons (near)	Boulder.	Argillaceous limestone.	(1)	162	2.98	4.9	8.2	15.3	7	162
9822	Lyons.	do.	Sandstone.	(1)	156	1.73	3.4	11.8	18.3	11	36
9823	Lyons (near)	do.	do.	(1)	156	1.37	2.9	13.8	16.0	14	13
11168	Denver (near)	Jefferson.	Augite andesite.	(1)	169	1.27	2.7	14.8	15.3	17	98
11169	do.	Denver.	Smelter slag.	(1)	216	.65	7.6	5.3	(1)	(1)	6
11170	do.	do.	do.	(1)	217	.50	5.1	7.8	(1)	(1)	7
11171	do.	do.	do.	(1)	217	.86	4.6	8.7	17.3	15	4

¹ Test not made.

TABLE I.—*Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918—Continued.*

CONNECTICUT.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, pounds per square inch.	Weight per cubic foot.	Absorption, pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
9914	Plainville.....	Hartford.....	Diabase.....	(1)	184	1.14	2.0	20.0	19.0	23	102
11151	East Haven.....	New Haven.....	Altered basalt.....	(1)	169	.63	2.7	10.8	17.3	10	72
12114-A	Rocky Hill.....	Hartford.....	do.....	33,220	192	.34	2.7	14.8	17.3	21	49
12115-B	North Branford.....	New Haven.....	Diabase.....	(1)	184	.27	4.1	9.8	16.0	12	55
12215	Reed's Gap.....	do.....	do.....	10,817	182	.49	2.8	11.3	17.3	11	173
12018	North Branford.....	do.....	do.....	(1)	185	.91	3.8	10.6	15.3	10	(1)
11067	Waterford.....	New London.....	Granite.....	21,810	162	1.74	(1)	(1)	18.7	13	(1)
11068	do.....	do.....	Biotite granite.....	23,850	162	.78	(1)	(1)	18.7	8	(1)
11069	do.....	do.....	do.....	22,170	164	.71	(1)	(1)	18.7	14	(1)
9794	Oneco.....	Windham.....	do.....	16,635	164	.55	(1)	(1)	18.3	8	(1)
11098	do.....	do.....	do.....	23,200	164	.67	(1)	(1)	18.7	6	(1)
11099	do.....	do.....	Gneissoid granite.....	20,200	163	.67	(1)	(1)	18.7	6	(1)
11148	(2).....	do.....	do.....	20,825	163	.44	4.6	8.7	18.7	7	(1)

DELAWARE.

11722	Wilmington.....	New Castle.....	Feldspathic quartzite.....	21,000	(1)	(1)	(1)	(1)	18.7	10	(1)
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FLORIDA.

10192	Titusville.....	Brevard.....	Shell limestone.....	(1)	155	4.03	7.5	5.3	14.9	2	42
10176	(2).....	Broward.....	Siliceous limestone.....	(1)	(1)	(1)	(1)	(1)	17.3	6	61
10111	Delray (3 miles west).....	Palm Beach.....	Shell limestone.....	(1)	(1)	(1)	50.9	0.8	(1)	(1)	52
10430	Boynton (near).....	do.....	do.....	(1)	(1)	(1)	37.2	1.1	(1)	(1)	40
10431	Jupiter (15 miles west).....	do.....	Siliceous limestone.....	(1)	(1)	(1)	12.5	3.2	14.7	5	43

GEORGIA.

10398	Cartersville (3 miles east).....	Barrow.....	Quartz siltst.....	(1)	159	0.71	5.0	8.0	19.3	11	(1)
10399	Cartersville.....	do.....	Ferruginous-sandstone.....	(1)	145	8.74	22.0	1.8	(1)	(1)	(1)
10400	Cass Station (2 miles north).....	do.....	Sandstone.....	(1)	152	2.86	(1)	(1)	18.7	12	(1)

10645	Carrollton (4 miles north).	Carroll	Biotite gneiss.	(1)	172	.35	4.7	8.5	17.7	7	(1)
10646	Carrollton	do.	Granite gneiss.	(1)	165	.62	4.5	8.9	18.7	5	(1)
10647	Carrollton (2 miles southwest).	do.	do.	(1)	169	.51	4.6	8.7	18.5	6	(1)
10648	Carrollton	do.	do.	(1)	168	.53	4.8	8.3	18.7	4	(1)
10649	Carrollton (7 miles northeast).	do.	Biotite gneiss.	(1)	166	.67	(1)	(1)	18.0	10	(1)
10655	Temple (4 miles east).	do.	do.	(1)	169	.56	7.7	5.2	17.0	5	(1)
10649	Carrollton (4 miles southeast).	do.	Biotite schist.	(1)	168	.51	5.7	7.0	18.9	8	(1)
10651	Mabry	do.	Epidote hornblendeschist.	(1)	192	1.12	5.5	7.3	17.7	9	(1)
10653	Roopville	do.	Mica schist.	(1)	168	.75	(1)	(1)	16.7	5	(1)
10657	Bowden (1 mile north).	do.	Amphibolite.	(1)	187	1.20	19.0	2.1	10.5	4	(1)
11512	Ball Ground.	Cherokee	Marble.	(1)	169	.23	12.42	3.22	8.0	3	(1)
11529	Holly Springs.	do.	Serpentine marble.	21,850	178	.40	(1)	(1)	12.6	6	(1)
10417	Athens	Clark	Biotite granite.	(1)	165	.68	6.4	6.3	18.7	6	(1)
10422	Athens (4 miles west).	do.	do.	(1)	163	1.56	(1)	(1)	15.4	4	(1)
10423	Athens (4 miles from).	do.	do.	(1)	163	.58	4.4	9.1	17.8	9	(1)
10428	Athens	do.	do.	(1)	167	.47	5.9	6.8	18.7	4	(1)
10410	Athens	do.	Granite gneiss.	(1)	169	.76	7.5	5.3	17.7	6	(1)
10421	Athens (south of).	do.	Biotite gneiss.	(1)	167	.65	(1)	(1)	18.7	6	(1)
10377	Marietta (1½ miles south).	Cobb	do.	(1)	170	.67	6.5	6.2	17.3	6	(1)
10378	Chattahoochee River.	do.	do.	(1)	165	.26	5.1	7.8	18.6	8	(1)
10380	Lost Mountain Store.	do.	Hornblende gneiss.	(1)	188	.93	(1)	(1)	13.3	4	(1)
10381	Southeast Kennesaw Mountain.	do.	Feldspathic gneiss.	18,500	167	.73	(1)	(1)	18.7	6	(1)
10382	Marietta (4 miles northwest).	do.	Biotite gneiss.	14,000	169	.50	5.6	7.1	17.3	6	(1)
10387	Aceworth (½ mile south).	do.	do.	(1)	175	.68	8.6	4.7	16.7	5	(1)
10388	Aceworth (4 miles south).	do.	do.	(1)	174	.59	10.1	3.9	16.7	5	(1)
10389	Austell (3 mile west).	do.	Granite gneiss.	12,890	163	.56	7.4	5.4	18.7	5	(1)
10393	Blackwell Station (1 mile north).	do.	Hornblende gneiss.	17,350	184	.42	4.9	8.2	17.3	7	(1)
10394	Kennesaw Mountain (north of).	do.	do.	(1)	180	1.05	(1)	(1)	18.0	7	(1)
10379	Smyrna (3½ miles west).	do.	Magnetic quartzite.	(1)	172	.84	(1)	(1)	18.0	7	(1)
10395	Kennesaw Station (4 miles southwest).	do.	Amphibolite.	(1)	191	.46	5.3	7.5	15.3	5	(1)
9869	Lela.	Decatur.	Siliceous shell limestone.	(1)	125	2.51	22.2	1.8	19.3	5	(1)
111204	Decatur (near).	Dekalb.	Biotite gneiss.	(1)	162	.65	3.8	10.5	18.0	12	(1)
11205	do.	do.	Granite.	(1)	191	1.07	7.3	5.5	18.0	6	(1)
11206	do.	do.	Biotite gneiss.	(1)	168	.73	5.3	7.6	17.3	9	(1)
12078	Stone Mountain.	do.	Granite.	11,220	164	.63	4.5	8.8	17.3	7	(1)
11940	Lithonia.	do.	do.	(1)	163	.43	4.6	8.7	17.9	6	(1)
11941	do.	do.	do.	(1)	165	.50	3.2	12.5	18.0	12	(1)
11942	do.	do.	do.	(1)	163	.51	4.7	8.5	17.8	6	(1)

¹ Test not made.

² Exact locality not known.

TABLE I.—Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918—Continued.

GEORGIA—Continued.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, pounds per square inch.	Weight per cubic foot.	Absorption, pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
11943	Lithonia	Dekalb	Granite.....	17,830	163	.63	4.0	10.0	18.2	7	()
10197	Beach Creek Bridge	Floyd	Calcareous shale.....	()	163	2.14	()	()	10.7	8	()
10199	Lavender Mountain	do.	Sandstone.....	()	163	1.47	()	()	17.7	29	()
10198	Hufaker Station	do.	Limestone.....	()	170	.22	3.6	11.1	16.0	6	42
10200	Rome (3 miles north)	do.	Argillaceous limestone.	()	168	.21	5.1	7.8	15.7	12	51
10202	Dozier Creek	do.	Limestone.....	()	170	.44	5.1	7.8	15.7	4	36
10203	Pinson	do.	do.....	()	169	.22	4.9	8.2	15.3	5	39
10211	Rome	do.	Argillaceous limestone.	()	167	.95	5.6	7.1	14.7	13	35
10221	Armuchee (1 mile southeast).	do.	Crystalline limestone.	()	168	.35	5.5	7.3	15.0	6	38
10222	do.	do.	Oolitic limestone.	()	168	.20	4.2	9.5	16.0	8	35
10223	do.	do.	Limestone.....	()	168	1.12	3.8	10.5	16.7	8	61
10224	Armuchee (southeast of).	do.	Argillaceous limestone.	()	167	.59	4.0	10.0	17.3	16	40
9751	Atlanta (near)	Fullon	Biotite granite.....	()	168	.32	3.7	10.8	18.3	8	17
9761	do.	do.	Gneissoid granite.....	()	165	.34	4.7	8.5	18.0	7	15
9764	Atlanta	do.	do.....	()	162	.85	()	()	19.3	8	24
9753	Atlanta (near)	do.	do.....	()	168	.35	3.8	10.5	()	()	10
9752	do.	do.	Granite gneiss.....	()	165	.53	()	()	18.7	9	15
9754	do.	do.	Biotite gneiss.....	()	165	.94	8.4	4.8	17.3	7	21
9755	Atlanta	do.	Mica gneiss.....	()	165	.38	3.0	13.3	18.7	10	19
9756	Atlanta (near)	do.	Granite gneiss.....	()	165	.30	4.3	9.3	18.7	7	15
9757	do.	do.	do.....	()	165	1.01	()	()	17.2	7	24
9758	do.	do.	do.....	()	165	.41	4.1	9.8	19.3	13	20
9759	Atlanta	do.	do.....	()	168	.30	3.8	10.5	18.3	13	20
9760	Atlanta (near)	do.	do.....	()	165	.40	3.5	11.4	18.3	9	25
9762	do.	do.	Biotite gneiss.....	()	172	1.03	()	()	14.7	4	35
9763	do.	do.	Hornblende gneiss.....	()	184	.77	()	()	19.0	7	32
9765	do.	do.	Biotite gneiss.....	()	165	.18	5.0	8.0	18.7	6	29
9766	Atlanta	do.	Granite gneiss.....	()	165	.36	3.4	11.8	18.0	9	22
9757	do.	do.	Hornblende biotite gneiss.	()	175	.26	4.4	9.1	16.7	6	21
10396	Fairmount (1/2 mile south).	Gordon	Limestone.....	()	169	.27	5.3	7.5	14.7	5	31
10397	do.	do.	do.....	()	170	.08	4.1	9.8	15.3	6	35
10347	Lawrenceville	Gwinnett	Biotite hornblende schist.	()	182	.60	()	()	15.7	5	()
10356	Lawrenceville (12 miles northeast).	do.	Hornblende schist.....	()	196	.65	6.6	6.1	()	()	()
10553	Lawrenceville	do.	Granite gneiss.....	()	159	.62	4.4	9.0	17.0	5	()
10564	Rosebud	do.	Biotite gneiss.....	()	162	.69	5.6	7.1	18.9	6	()

TABLE I.—Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918—Continued.

IDAHO.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, per pounds per square inch.	Weight per cubic foot.	Absorption, per pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Cementing value.
10462	St. Anthony.....	Fremont.....	Basalt.....	(1)	159	4.17	7.2	5.6	16.7	4	(1)

ILLINOIS.

11224	McCook.....	Cook.....	Dolomite.....	(1)	158	2.33	6.0	6.7	(1)	(1)	50
11225	Thornton.....	do.....	do.....	(1)	157	2.43	6.8	5.9	(1)	(1)	66
11872	do.....	do.....	Argillaceous dolomite.	(1)	162	2.27	5.5	7.3	13.6	6	23
12236	Whitehill quarry.....	Johnson.....	Siliceous limestone.	(1)	195	.54	4.9	8.2	14.7	12	40
9730	Aurora.....	Kane.....	Smelter slag.....	(1)	221	.17	2.2	18.2	(1)	(1)	(1)
10367	Kankakee.....	Kankakee.....	Dolomite.....	11,180	158	2.12	8.4	4.8	16.0	5	22
11790	Lehigh.....	do.....	Argillaceous dolomite.	(1)	157	3.08	7.0	5.7	14.3	7	(1)
10208	Fox Township.....	Kendall.....	Dolomite.....	(1)	169	1.67	4.9	8.2	13.3	8	37
11133	Pontiac.....	Livingson.....	Argillaceous limestone.	(1)	156	2.73	12.9	3.1	(1)	(1)	60
11780	Alton.....	Madison.....	Limestone.....	(1)	166	.93	5.9	6.8	12.7	4	(1)
9827	Joliet.....	Will.....	Dolomite.....	8,130	168	1.18	4.9	8.2	15.1	8	39
10772	Aurora (near).....	do.....	Smelter slag.....	(1)	212	.00	7.3	5.5	18.7	7	10

INDIANA.

9688	(1).....	Clark.....	Argillaceous dolomite.	(1)	150	5.23	10.3	3.9	0.0	3	53
11082	Bazil.....	Clay.....	Limestone.....	(1)	174	.66	4.3	9.3	17.3	11	48
11018	Milfrown.....	Crawford.....	do.....	(1)	167	.56	3.3	12.1	16.3	11	34
11019	do.....	do.....	do.....	(1)	168	.66	3.6	11.1	15.0	7	21
11020	do.....	do.....	do.....	(1)	167	.60	3.5	11.4	15.3	11	28
11021	do.....	do.....	Argillaceous limestone.	(1)	168	1.17	3.0	13.3	15.3	11	36
11022	do.....	do.....	Limestone.....	(1)	168	.37	4.5	8.9	16.7	6	35
11023	do.....	do.....	do.....	(1)	168	.61	4.4	9.1	15.7	7	13
11024	do.....	do.....	Pisolithic limestone.	(1)	158	2.78	5.2	7.7	8.7	4	21
11025	do.....	do.....	Limestone.....	(1)	161	2.59	4.5	8.9	14.7	8	23
9859	St. Paul.....	Decatur.....	Argillaceous limestone.	(1)	168	2.01	4.4	9.1	14.0	5	23
10114	do.....	do.....	do.....	(1)	168	1.01	4.0	10.0	13.3	5	32
11178	do.....	do.....	Limestone.....	(1)	166	1.62	4.7	8.5	12.3	6	(1)
11066	Schneelville.....	Dubois.....	Siliceous limestone.	(1)	169	2.58	3.8	10.5	15.3	12	43
11183	Huntington.....	Huntington.....	Dolomite.....	25,420	163	2.10	4.1	9.7	14.0	7	95
9811	Vernon.....	Jennings.....	do.....	(1)	159	4.30	5.0	8.0	15.3	9	63
10834	do.....	do.....	Limestone.....	(1)	167	2.08	3.9	10.2	15.3	9	37

10847	do.	do.	Dolomite.	(1)	149	6.90	8.1	4.9	12.0	4	22
11235	do.	do.	Argillaceous dolomite.	(1)	149	3.67	4.8	8.3	12.3	6	71
11236	do.	do.	Dolomite.	(1)	162	3.67	4.8	8.3	12.3	6	71
11237	do.	do.	Limestone.	(1)	164	1.45	5.7	7.0	14.7	11	24
11238	do.	do.	Argillaceous limestone.	(1)	166	1.00	4.5	8.9	13.3	6	59
11250	Bloomington (east of).	do.	Limestone.	(1)	141	9.27	10.9	3.6	8.0	5	27
10257	Bloomington.	do.	Argillaceous limestone.	(1)	(1)	(1)	(1)	(1)	12.0	5	26
10193	do.	do.	Argillaceous limestone.	(1)	(1)	(1)	(1)	(1)	14.6	5	50
10193	Greencastle.	do.	Limestone.	(1)	185	1.03	4.8	8.3	14.7	7	22
11818	do.	do.	do.	(1)	168	.66	(1)	(1)	16.7	5	46
10727	do.	do.	do.	(1)	167	.66	(1)	(1)	16.7	5	46
10519	Fillmore.	do.	do.	(1)	160	1.07	6.9	5.8	15.3	(1)	(1)
10590	do.	do.	Argillaceous limestone.	(1)	159	2.22	7.3	5.5	9.0	3	96
10620	Wilberd.	do.	Limestone.	(1)	162	2.00	(1)	(1)	11.2	6	18
9355	Bluffton.	Warrick.	Dolomite.	(1)	159	3.81	4.5	8.9	12.9	9	40
10693	(?)	Wells.	Limestone.	(1)	165	2.89	6.2	6.5	13.0	8	45
10694	(?)	(?)	Argillaceous limestone.	(1)	166	1.24	3.4	7.5	13.5	52	32
				(1)	148	8.75	8.9	4.5	0.0	3	29

IOWA.

11783	Dubuque.	Dubuque.	Argillaceous dolomite.	(1)	169	1.55	5.7	7.1	15	7	(1)
11614	Council Bluffs.	Mills.	Limestone.	(1)	166	.43	5.4	7.4	15.7	6	17

KANSAS.

9599	Fort Scott (7 miles west of).	Bourbon.	Limestone breccia.	7,380	(1)	(1)	(1)	(1)	(1)	(1)	(1)
11689	Lecompton.	Douglas.	Cherty limestone.	(1)	157	1.01	9.3	4.3	12.0	5	14
11687	Lawrence (near).	do.	Argillaceous limestone.	(1)	158	2.40	6.1	6.6	8.7	4	14
11684	Lawrence.	do.	do.	(1)	152	3.97	7.6	5.3	4.0	4	13
11683	do.	do.	do.	(1)	154	4.40	10.7	3.7	14.7	6	14
11681	Junction City.	Geary.	do.	(1)	119	12.30	31.8	1.3	0.0	3	12
11682	do.	do.	Cherty limestone.	(1)	184	10.20	13.0	3.1	14.0	2	(1)
11695	do.	do.	Argillaceous limestone.	(1)	149	5.44	13.7	2.9	(1)	(1)	18
11696	do.	do.	do.	(1)	164	1.51	5.7	7.0	14.3	7	14
11686	Tonganoxie.	Leavenworth.	do.	(1)	156	2.91	7.6	5.3	11.3	5	10
11692	Neely.	do.	Limestone.	(1)	155	2.60	8.3	4.8	15.7	6	16
9780	Beloit.	do.	Argillaceous limestone.	(1)	143	6.71	18.2	2.2	4.3	33	33
11677	Helmiok "A."	Michell.	do.	(1)	132	8.85	11.5	3.5	16.7	2	11
11678	Helmiok "B."	Morris.	do.	(1)	132	9.19	30.1	1.3	2.7	3	19
11679	Helmiok "C."	do.	do.	(1)	143	6.59	15.0	2.7	0.0	3	14
11680	Helmiok "D."	do.	do.	(1)	134	9.25	19.5	2.1	0.0	3	14
11693	Council Grove.	do.	do.	(1)	153	9.1	9.1	4.4	11.7	3	11
11691	Topeka.	Shawnee.	do.	(1)	144	7.76	7.2	5.6	13.3	3	15
11690	do.	do.	do.	(1)	151	4.99	7.7	5.2	12.0	3	15
11685	do.	do.	do.	(1)	152	4.72	8.7	4.6	10.3	6	16
11676	do.	do.	Limestone.	(1)	165	1.35	8.1	7.0	13.3	8	19
11683	do.	do.	do.	(1)	156	3.14	7.7	5.2	16.5	6	15

¹ Test not made.² Exact locality not known.

TABLE I.—Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918—Continued.

KENTUCKY.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, pounds per square inch.	Weight per cubic foot.	Absorption, per pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
11343	Princeton (near).	Caldwell.	Cherty limestone.	(1)	164	0.48	4.5	8.9	16.7	8	43
10134	Lexington.	Fayette.	Argillaceous limestone.	(1)	168	.19	6.1	6.6	16.0	4	41
10136	do.	do.	do.	(1)	168	.17	5.5	7.3	12.7	4	34
10451	Corvallen Springs (near).	Trigg.	do.	(1)	167	.45	4.7	8.5	14.2	6	37
9829	(2).	(2).	Limestone.	(1)	165	1.31	(1)	(1)	13.7	6	40
9830	(2).	(2).	Argillaceous limestone.	(1)	165	.82	(1)	(1)	13.5	10	44

LOUISIANA.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, pounds per square inch.	Weight per cubic foot.	Absorption, per pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
11241	New Orleans.	Orleans.	Argillaceous sandstone.	(1)	128	11.35	19.1	2.1	14.7	6	(1)

MAINE.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, pounds per square inch.	Weight per cubic foot.	Absorption, per pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
11483	Auburn.	Androscoggin.	Biotite gneiss.	(1)	170	0.58	4.4	9.1	18.0	8	(1)
10219	North Jay.	Franklin.	Granite.	21,260	164	.84	2.7	14.8	19.3	7	13
11416	do.	do.	Biotite gneiss.	25,090	(1)	(1)	(1)	(1)	17.3	7	(1)
12283	do.	do.	Granite.	163	163	.69	4.4	9.1	19.0	11	(1)
9997	Mount Desert.	Hancock.	do.	19,780	165	.21	3.4	11.8	19.7	9	11
10233	do.	do.	do.	19,220	162	.90	4.1	9.8	18.7	8	14
10234	do.	do.	do.	21,700	180	.67	3.2	12.5	18.7	12	(1)
10988	Ship Harbor.	do.	do.	28,550	165	.21	(1)	(1)	19.3	13	(1)
10989	do.	do.	do.	26,450	163	.31	(1)	(1)	18.7	13	(1)
10990	do.	do.	do.	32,430	164	.42	(1)	(1)	19.3	16	(1)
11327	Hallowell.	Kennebec.	do.	35,380	162	.78	3.0	13.2	18.7	8	(1)
11408	Litchfield.	do.	Biotite gneiss.	(1)	168	.40	4.0	10.0	19.3	6	(1)
11468	Winslow.	do.	Microschist.	(1)	174	.47	4.1	9.8	16.0	8	(1)
11486	Hallowell.	do.	Granite.	27,760	163	.72	3.2	12.5	18.7	7	(1)
11215	Camden.	Knox.	Biotite quartzite.	18,040	172	.22	3.4	11.8	16.7	11	(1)
9781	St. George.	do.	Granite.	18,780	(1)	(1)	(1)	(1)	(1)	12	(1)
9845	do.	do.	do.	17,150	(1)	(1)	(1)	(1)	18.8	9	(1)
11418	do.	do.	Biotite granite.	25,180	(1)	(1)	(1)	(1)	18.0	10	(1)
10019	Vinal Haven.	do.	do.	21,650	165	.25	3.1	12.9	19.3	14	28
9996	Long Cove.	do.	Granite.	17,540	168	.23	3.3	12.1	19.2	10	30
10249	do.	do.	Biotite granite.	22,500	165	.86	3.0	13.3	19.3	13	(1)

10250	do.	d.	22, 330	166	.82	3.5	11.4	19.3	8	(1)	47
9706	Rockland.	do.	(1)	175	.40	4.3	9.3	17.0	4	(1)	
11411	Rockport.	do.	31, 580	(1)	(1)	(1)	(1)	18.0	8	(1)	
11414	Vinal Haven.	do.	32, 090	(1)	1.79	11.4	3.5	19.3	11	(1)	
11404	Richmond.	Sagadahoc.	(1)	163	1.79	11.4	3.5	17.0	5	(1)	
11405	do.	do.	(1)	163	.89	9.5	9.8	18.0	5	(1)	
11406	Bowdoinham.	do.	(1)	165	.89	9.5	4.2	17.3	3	(1)	
11407	Richmond.	do.	(1)	170	1.41	8.4	4.8	17.3	3	(1)	
11421	Bowdoinham.	do.	(1)	159	1.63	7.1	5.6	17.3	3	(1)	
11422	do.	do.	(1)	163	1.74	12.4	3.2	(1)	(1)	(1)	

MARYLAND.

11335	Raspensburg.	Baltimore.	(1)	186	0.41	3.5	11.4	17.3	15	(1)	
11336	do.	do.	(1)	165	6.7	6.0	6.0	15.0	7	(1)	
11556	Bare Hills.	do.	(1)	161	1.02	7.7	5.2	12.3	5	(1)	
10105	Frederick.	Frederick.	(1)	189	(1)	3.0	13.3	16.0	5	(1)	
12360	Bel Air (near).	Harford.	(1)	189	.18	2.6	15.0	18.0	19	(1)	
10021	North Laurel.	Howard.	(1)	200	.46	3.5	11.4	17.7	8	(1)	32
10101	Dickerson.	Montgomery.	(1)	198	(1)	1.4	28.6	18.5	21	(1)	
11152	Ilalpu.	do.	(1)	171	.65	3.1	12.9	16.0	11	(1)	
11153	do.	do.	(1)	171	.42	3.1	12.9	18.7	13	(1)	
11342	Cavetown.	Washington.	(1)	171	.29	3.6	11.1	16.0	9	(1)	51

MASSACHUSETTS.

10016	Great Barrington.	Berkshire.	(1)	175	0.37	5.6	7.1	15.3	4	(1)	43
11508	Lee.	do.	(1)	179	.31	7.2	5.6	11.2	2	(1)	
10288	Otis.	do.	18, 260	166	.71	2.6	15.4	18.0	9	(1)	
12473	Windor.	do.	(1)	164	.24	3.9	10.3	18.7	12	(1)	
9770	Fall River.	Bristol.	(1)	178	.27	2.7	14.8	18.2	17	(1)	24
10117	Aushnet.	do.	(1)	167	.44	2.4	16.6	19.0	17	(1)	
10217	Seeltonk.	do.	(1)	167	.76	4.0	10.0	18.7	12	(1)	17
11413	Beverly.	Essex.	28, 580	(1)	(1)	(1)	(1)	19.3	9	(1)	
12289	do.	do.	(1)	181	.87	(1)	(1)	17.0	18	(1)	
9649	Essex.	do.	(1)	165	.32	3.7	10.8	19.7	10	(1)	9
9630	do.	do.	18, 580	165	.35	4.4	9.1	19.7	10	(1)	17
9651	do.	do.	22, 285	165	.33	4.9	8.2	19.3	7	(1)	13
9652	do.	do.	18, 780	165	.21	3.6	11.1	19.3	11	(1)	13
11215	Lynn.	do.	(1)	165	.28	3.4	11.8	(1)	(1)	(1)	48
12256	Newburyport.	do.	(1)	175	.34	3.6	11.0	18.0	10	(1)	
11268	(?)	do.	(1)	170	.72	3.1	12.9	18.3	10	(1)	17
12220	Greenfield.	Franklin.	(1)	185	.33	(1)	(1)	18	30	(1)	
12215	Westfield.	Hampden.	(1)	185	.14	2.2	18.2	18	26	(1)	131

1 Test not made.

2 Exact locality not known.

TABLE I.—Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918—Continued.

MASSACHUSETTS—Continued.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, pounds per square inch.	Weight per cubic foot.	Absorption, pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
11795	Ayres	Middlesex	Calcareous quartzite	(1)	168	0.85	6.0	6.6	11	12	(1)
11796	do.	do.	Granite	(1)	159	1.34	9.4	4.3	17.7	5	(1)
11871	do.	do.	Biotite gneiss	(1)	168	.80	4.9	8.2	19.0	7	(1)
11720	Groton	do.	Granite	22,540	162	.76	5.2	7.7	18.0	8	(1)
12090-A	Malden	do.	Altered rhyolite	(1)	2 169	2.21	22.8	214.3	18.7	(1)	214
12090-B	do.	do.	do.	(1)	2 169	2.21	22.8	214.3	18.7	(1)	214
12090-C	do.	do.	do.	(1)	2 169	2.21	22.8	214.3	18.7	(1)	214
12088-A	Medford	do.	Altered diabase	(1)	3 179	3.28	34.1	39.8	18	(1)	312
12088-B	do.	do.	Fragmental rhyolite	(1)	3 179	3.28	34.1	39.8	18	(1)	312
12088-C	do.	do.	Altered rhyolite	(1)	3 179	3.28	34.1	39.8	18	(1)	312
12088-D	do.	do.	Altered rhyolite	(1)	3 179	3.28	34.1	39.8	18	(1)	312
12141-A	Melrose	do.	do.	(1)	3 170	3.116	32.6	315.4	19.3	17	318
12141-B	do.	do.	do.	(1)	3 170	3.116	32.6	315.4	18	20	318
12141-C	do.	do.	do.	(1)	3 170	4.116	32.6	315.4	18	14	318
12141-D	do.	do.	do.	(1)	3 170	3.116	32.6	315.4	16.7	(1)	318
12253	Chelmsford	do.	Granite	(1)	162	.85	4.1	9.7	18	10	(1)
12145-A	Stony Brook	do.	Altered diabase	(1)	3 179	3.22	33.5	311.4	17.3	13	(1)
12145-B	do.	do.	Altered granite	(1)	3 179	3.22	33.5	311.4	18.7	11	(1)
12145-C	do.	do.	Altered rhyolite	(1)	3 179	3.22	33.5	311.4	(1)	16	(1)
12061-A	Waltham	do.	Hornblende trachyte	(1)	2 180	2.32	22.5	216.0	17.3	18	22
12061-B	do.	do.	do.	(1)	2 180	2.32	22.5	216.0	18	18	17
12324	West Townsend	do.	Granite	(1)	162	1.14	7.4	5.4	18.7	8	(1)
12063-A	Brookline	Norfolk	Altered andesite	(1)	3 174	3.32	32.0	320.0	18	22	38
12063-B	do.	do.	do.	(1)	3 174	3.32	32.0	320.0	18	(1)	38
12063-C	do.	do.	do.	(1)	3 174	3.32	32.0	320.0	18.7	(1)	38
12063-D	do.	do.	do.	(1)	3 174	3.32	32.0	320.0	18.7	(1)	38
12195	Quincy	do.	Slate	(1)	168	.63	4.3	9.3	15.3	18	26
11991-A	Brighton	Suffolk	Feldspathic sandstone	(1)	2 166	2.75	27.1	25.6	18.7	13	(1)
11991-B	do.	do.	do.	(1)	2 166	2.75	27.1	25.6	8.3	4	(1)
12051	do.	do.	Altered trachyte	(1)	175	.17	5.5	7.2	18.7	(1)	172
12050	Roxbury	do.	Altered rhyolite	(1)	168	.43	5.9	6.9	18.7	7	13
12056	do.	do.	Rhyolite breccia	(1)	167	.18	5.9	6.8	18.7	(1)	13
12089-A	Boston (Roslindale)	do.	Altered rhyolite	(1)	3 166	3.23	33.2	312.5	19	25	(1)
12089-B	do.	do.	do.	(1)	3 166	3.23	33.2	312.5	18.7	(1)	(1)
12089-C	do.	do.	do.	(1)	3 166	3.23	33.2	312.5	18.3	(1)	(1)
12089-D	do.	do.	do.	(1)	3 166	3.23	33.2	312.5	18.3	(1)	(1)
10935	Fayville	Worcester	Granite gneiss	(1)	162	.75	3.0	13.3	18.7	11	(1)
11250	Fitchburg	do.	Biotite granite	(1)	166	.79	5.7	7.0	17.9	7	19
10089	West Rutland	do.	Granite	(1)	164	.16	2.9	13.8	18.6	12	18
10090	do.	do.	do.	(1)	161	.79	6.7	6.0	18.0	7	35
10091	do.	do.	Biotite gneiss	(1)	168	.89	6.5	6.2	16.3	9	

MICHIGAN.

9855	Marquette.....	Marquette.....	Hornblende gneiss.....	(1)	184	0.62	(1)	(1)	19.3	22	30
9856	do.....	do.....	Amphibolite.....	(1)	181	.57	(1)	(1)	18.0	17	49
9857	do.....	do.....	Altered diabase.....	(1)	184	.66	(1)	(1)	18.7	25	32
9975	do.....	do.....	do.....	(1)	181	.52	2.1	19.1	19.3	12	27
9976	do.....	do.....	do.....	(1)	175	.42	3.8	10.5	16.0	13	55
9977	do.....	do.....	do.....	(1)	184	.60	3.1	12.9	18.3	11	97
11223	Dundee.....	do.....	Limestone.....	(1)	156	1.32	9.0	4.4	0	4	59
9889	Monroe.....	do.....	Dolomite.....	(1)	175	.64	3.6	11.1	17.0	16	30
9988	do.....	do.....	Argillaceous dolomite.....	11,750	165	3.03	4.2	9.5	(1)	5	22
9989	do.....	do.....	do.....	(1)	175	1.47	4.7	8.5	13.5	5	27
10041	do.....	do.....	Dolomite.....	(1)	172	1.80	3.6	11.1	17.0	17	18
11752	Calcutte.....	Presque Isle.....	Limestone.....	(1)	157	1.88	6.9	5.6	5.9	4	16
9888	Sibley.....	Wayne.....	do.....	(1)	159	2.82	12.4	3.2	15.3	6	44

MINNESOTA.

11703	Sauk Rapids.....	Benton.....	Biotite granite.....	(1)	165	0.35	4	10.0	19.0	9	(1)
11704	do.....	do.....	do.....	(1)	163	.48	7	5.7	18.7	7	(1)
11705	do.....	do.....	Hornblende granite.....	(1)	169	.82	3.2	12.5	18.7	8	(1)
11341	Mankato.....	Blue Earth.....	Calcareous sandstone.....	(1)	136	4.8	6.4	6.3	5.3	2	28
10185	Jasper.....	Rock.....	Quartzite.....	(1)	164	.18	2.0	20.0	19.7	17	(1)

MISSISSIPPI.

10287	(1).....	Holmes.....	Sandstone.....	(1)	144	4.70	7.8	5.1	18.0	8	(1)
11791	Brandon.....	Rankin.....	Argillaceous limestone.....	(1)	156	3.08	5.6	7.2	12.0	5	(1)
10098	New Albany.....	Union.....	Sandstone.....	(1)	156	2.58	7.1	3.6	18.7	7	

MISSOURI.

11510	Cassville.....	Barry.....	Marble.....	(1)	169	0.70	5.7	7.0	11.7	3	(1)
10169	West Line.....	Cass.....	Limestone.....	(1)	156	1.09	11.5	3.5	13.5	3	24
10110	(1).....	do.....	do.....	(1)	167	.83	7.6	7.2	18.7	6	31
11509	Kansas City.....	Jackson.....	Marble.....	(1)	165	.86	7.5	7.7	8.3	2	(1)
10251	Hamburg.....	St. Charles.....	Limestone.....	(1)	167	.93	3.2	7.7	12.3	4	37
10252	do.....	do.....	do.....	(1)	164	.90	7.3	5.5	10.7	3	34
10287	Sinclair.....	do.....	do.....	(1)	167	.73	4.0	10.0	16.0	7	25
10238	do.....	do.....	do.....	(1)	167	.75	5.1	7.9	13.3	5	22
11743	University City.....	St. Louis.....	do.....	(1)	158	3.81	5.2	7.7	14.6	7	26
11789	Vigfus.....	do.....	do.....	(1)	163	2.1	6.7	5.9	14.0	5	13

¹ Test not made.² Test made on mixture of A and B.³ Test made on mixture of A, B, C, and D.⁴ Locality unknown.

TABLE I.—Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918—Continued.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, per pounds per square inch.	Weight per cubic foot.	Absorption, per pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
9905	Nehawka.....	Cass.....	Argillaceous limestone.....	(1)	168	0.75	4.7	8.5	16.0	6	42
NEW HAMPSHIRE.											
11339	Redstone.....	Carroll.....	Biotite granite.....	21,910	161	0.61	5.7	7.0	18.0	7	(1)
12229	do.....	do.....	Granite.....	(1)	162	.65	6.5	6.2	18.0	7	(1)
9946	Fitzwilliam.....	Cheshire.....	do.....	26,100	165	.32	3.7	10.8	17.7	9	15
9893	Marlboro.....	do.....	do.....	15,615	165	.36	6.7	6.0	17.3	8	18
9894	do.....	do.....	do.....	15,255	165	.52	5.7	7.0	19.3	6	23
9895	Fitzwilliam.....	do.....	do.....	10,825	165	.33	3.8	10.5	18.7	9	17
11234	Milford.....	Hillboro.....	Biotite granite.....	18,250	163	.81	3.3	12.1	18.3	7	(1)
11419	do.....	do.....	Granite.....	19,800	(1)	(1)	(1)	(1)	18.0	8	(1)
9994	Allenstown.....	Merrimack.....	do.....	18,110	165	.61	2.5	16.0	19.0	11	23
12185	Webb.....	do.....	do.....	(1)	163	2.30	4.4	9.1	17.0	7	(1)
11714	Dover.....	Strafford.....	Siliceous marble.....	(1)	173	.09	4.8	8.3	17.7	15	11
12325	do.....	do.....	Slate.....	(1)	177	.12	(1)	(1)	14.7	13	33
NEW JERSEY.											
12263	Upper Montclair.....	Essex.....	Altered basalt.....	(1)	183	0.20	2.9	13.8	18.7	43	59
10795	Lambertville.....	Hamorton.....	Diabase.....	(1)	183	.46	2.8	14.3	18.7	19	49
12386	do.....	do.....	Gabbroitic diabase.....	(1)	184	.22	3.3	12.1	18.2	29	46
12333	Middle Valley.....	do.....	Hornblende gneiss.....	(1)	189	.11	3.4	11.8	18.0	15	30
11914	Pennington.....	Mercer.....	Altered diabase.....	(1)	182	.24	3.4	11.8	18.3	18	19
11996	Millington.....	Morris.....	Basalt.....	(1)	185	.47	2.2	18.0	16.7	15	77
12421	Morristown.....	do.....	Altered gabbro.....	(1)	170	.71	(1)	(1)	17.7	12	28
9924	Mount Hope.....	do.....	Pyroxene granite.....	(1)	178	.44	2.4	16.7	18.3	9	18
10172	Boundbrook.....	Somerset.....	Altered diabase.....	(1)	184	.06	2.2	18.2	18.7	30	54
12101	do.....	do.....	Basalt.....	(1)	182	.24	2.6	15.2	18.7	35	78
NEW MEXICO.											
9768	Silver City.....	Grant.....	Altered granitic porphyry.....	(1)	156	1.73	3.4	11.8	18.6	18	(1)

NEW YORK.

[illegible]

NORTH CAROLINA.

1344	Sunset Mountain.	Asheville.	Biotite gneiss.	(1)	166	0.33	4.1	9.8	17.3	7
1345	do.	do.	do.	(1)	171		.24	11.4	16.7	10
10193	Cranberry	Avery.	Hornblende gneiss.	(1)	208	.70	4.3	9.3	(1)	(1)
10194	do.	do.	do.	(1)	192	.48	5.5	7.3	(1)	18
9858	Asheville.	Buncombe.	Biotite gneiss.	(1)	168	.26	4.4	9.1	19.3	16
10972	do.	do.	do.	(1)	135	1.35	2.7	14.8	18.0	33
10973	do.	do.	do.	(1)	172	.67	3.7	11.4	12.0	(1)
10974	do.	do.	do.	(1)	169	.25	6.06	6.6	12.3	(1)
11507	Regal.	Cherokee.	Marble.	(1)	173	.85	2.9	13.8	(1)	(1)
11507	Belmont.	Gaston.	Aplite granite.	(1)	173	.77	5.7	7.0	18.0	(1)
12180	Waynesville.	Waynesville.	Biotite gneiss.	(1)	173	.76	5.7	7.0	18.0	(1)
11751	Asheford.	McDowell.	Dolomitic marble.	(1)	178	.41	4.5	8.9	16.0	(1)
11397	Granite Quarry.	Rowan.	Granite.	(1)	178			8.7	(1)	5
9892	Granite Quarry.	do.	do.	21, 125	(1)			20.0	(1)	8
10306	Granite Quarry (near).	do.	do.	34, 860	164	.22	2.0	18.7	18.7	(1)
10405	Granite Quarry.	do.	do.	(1)	(1)			(1)	(1)	11
10412	do.	do.	do.	20, 930	164	.51	2.8	14.3	19.3	10
10413	do.	do.	do.	23, 580	162	.43	3.3	12.1	19.0	9
10770	do.	do.	do.	17, 800	164	.43	5.2	7.7	19.3	7
9897	do.	do.	do.	(1)	162	.55	13.8	2.9	(1)	(1)
9897	do.	(2).	do.	26, 400	162	.44	2.2	18.2	18.7	(1)
11200	Salisbury	Rowan.	do.	28, 340	(1)			(1)	19.3	9
11415	do.	do.	do.	13, 680	166	.56	5.1	7.8	(1)	7
12116	Harris (near).	Rutherford.	Biotite granite.	12, 230	166	.61	7.1	5.6	17.3	4
11706	do.	do.	Biotite gneiss.	23, 990	(1)			(1)	10.3	6
11420	Mount Airy.	Surry.	Granite.	(1)	164	.04	4.3	18.7	17.3	(1)
11402	Wendell.	Wake.	Biotite granite.	(1)	164			9.3	18.7	4
11566	Neverson.	Wilson.	Granite.	21, 920	165	.34	5.4	7.4	18.7	9

² Locality unknown.

TABLE I.—Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918—Continued.

OHIO.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, pounds per square inch.	Weight per cubic foot.	Absorption, pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
9844	Lima.....	Allen.....	Dolomite.....	(1)	165	2.67	3.2	12.5	14.7	7	(1)
10025	do.....	do.....	Argillaceous limestone.....	(1)	168	2.77	3.5	11.4	14.7	12	31
10026	do.....	do.....	do.....	(1)	168	1.96	3.7	10.8	16.0	12	33
10027	do.....	do.....	do.....	(1)	168	2.26	3.6	11.1	15.0	11	34
10305	do.....	do.....	Limestone.....	(1)	169	1.80	4.2	9.5	16.0	6	27
9953	Middletown.....	Butler.....	Basic open-hearth slag.....	(1)	209	2.33	4.1	9.8	(1)	(1)	471
9954	do.....	do.....	do.....	(1)	190	2.74	20.4	1.7	(1)	(1)	191
10316	do.....	Clinton.....	Limestone.....	(1)	171	1.66	5.2	7.6	13.2	4	36
10317	do.....	do.....	Siliceous limestone.....	(1)	167	1.49	6.6	6.1	13.7	5	45
11331	Sandusky.....	Erie.....	Argillaceous limestone.....	14,615	167	1.38	3.0	13.3	12.9	9	65
10534	Marble Cliff.....	Franklin.....	do.....	(1)	167	(1)	(1)	(1)	15.2	6	27
11202	Kenton.....	Hardin.....	Dolomite.....	(1)	164	2.08	2.7	14.8	15.3	15	48
11225	do.....	do.....	do.....	(1)	167	2.35	2.5	16.0	17.0	10	52
11329	Dunkirk.....	do.....	Argillaceous dolomite.....	26,295	167	2.17	3.4	11.8	13.0	10	44
9883	North Baltimore (Wood County near)	Henry.....	do.....	(1)	168	2.61	5.0	8.0	16.0	10	52
11198	Bellevue.....	Huron.....	Dolomite.....	(1)	156	4.89	4.9	8.2	6.0	5	(1)
11203	Clarksfield.....	do.....	Feldspathic sandstone.....	7,910	136	7.75	7.5	3.3	(1)	5	21
9854	Ironton.....	Lawrence.....	Blast-furnace slag.....	(1)	181	1.73	5.8	6.9	16.0	6	47
9890	Waterville.....	Lucas.....	Argillaceous dolomite.....	(1)	168	2.36	3.3	12.1	16.3	11	38
9883	do.....	do.....	Dolomite.....	(1)	168	2.04	2.8	14.3	16.3	14	41
11037	White House.....	do.....	Siliceous limestone.....	9,810	161	2.90	6.2	6.5	9.3	6	35
10537	Piqua.....	Miami.....	Dolomite.....	15,150	156	2.53	10.3	3.9	11.0	4	30
10538	do.....	do.....	do.....	(1)	178	.97	4.8	8.3	15.0	13	30
10532	Centerville.....	Montgomery.....	Argillaceous limestone.....	(1)	(1)	(1)	(1)	(1)	(1)	3	30
10533	do.....	do.....	do.....	(1)	(1)	(1)	(1)	(1)	(1)	5	24
10535	do.....	do.....	do.....	(1)	(1)	(1)	(1)	(1)	(1)	3	37
9945	Rocky Ridge.....	Ottawa.....	Dolomite.....	13,360	175	.41	5.4	7.4	10.9	9	37
9973	Limestone.....	do.....	do.....	(1)	162	(1)	5.5	7.3	12.0	9	38
10539	New Paris.....	do.....	do.....	(1)	167	1.12	5.5	7.3	12.0	6	37
12358	Woodville.....	Perebe.....	do.....	16,480	160	4.14	7.5	5.3	17.0	7	70
11320	Bloomsville.....	Sandusky.....	Argillaceous limestone.....	16,565	166	2.22	3.6	11.1	12.5	6	38
11328	Middlepoint.....	Schenectady.....	do.....	27,570	169	1.76	3.8	10.5	15.6	10	61
10340	Lucky.....	Van Wert.....	Dolomite.....	(1)	162	3.68	7.3	5.3	12.0	6	38
9917	Bowling Green.....	Wood.....	do.....	(1)	165	1.83	7.5	5.3	12.2	6	33
9957	North Baltimore.....	do.....	do.....	(1)	168	2.08	4.0	10.0	11.3	14	50

OKLAHOMA.

11640	Dewey	Washington	Argillaceous limestone	1.10	5.3	7.6	14.0	5	23
11641	do.	do.	do.	1.14	5.3	7.6	11.3	5	30

PENNSYLVANIA.

9786	Granite	Adams	Gabbroitic diabase	(1)	(1)	(1)	15.2	14	(1)
10104	Birdsboro (near)	Berks	Diabase	(1)	1.7	23.5	18.7	13	(1)
11793	Yardley (near)	do.	Granite gneiss	0.21	4.0	10.0	18.3	15	(1)
11409	Quakertown	Bucks	Diabase	(1)	(1)	(1)	18.0	10	(1)
12166	do.	do.	Hyperssthene diabase	.17	2.8	14.3	18.3	25	(1)
11261	Summit Hill	Carbon	Feldspathic sandstone	.83	4.7	18.5	18.0	10	(1)
12477	Lehigh Gap	do.	Quartzite	.42	3.3	12.1	18.7	17	(1)
12478	do.	do.	Feldspathic quartzite	.53	2.8	14.3	18.7	16	(1)
12181	Catawissa	Columbia	Feldspathic sandstone	.36	2.8	14.3	19.3	17	31
12186	do.	do.	do.	.41	3.2	12.5	19.3	25	24
12361	Conewago	Dauphin	Diabase	.35	2.8	14.3	18.0	20	13
10357	(?)	Delaware	Biotite gneiss	(1)	(1)	(1)	18.0	9	(1)
9773	Connellsville	Fayette	Siliceous limestone	.46	2.8	14.3	17.7	13	85
12379	Union Furnace	Huntingdon	Marble	.33	3.9	10.3	15.7	7	(1)
11255	Duryea	Luzerne	Calcareous sandstone	.41	3.4	11.8	16.7	13	(1)
11352	White Haven	do.	Feldspathic quartzite	(1)	(1)	(1)	(1)	19	(1)
10518	Montoursville	Lycumberg	Argillaceous limestone	.10	6.6	6.1	16.2	6	27
10672	Jersey Shore	do.	Siliceous limestone	.44	2.6	15.4	18.2	9	53
12261	Green Lane	Montgomery	Altered slate	.38	2.3	17.4	17.3	24	17
10137	South Bethlehem	Northampton	Blast-furnace slag	4.42	9.3	4.3	13.7	3	103
12234	Dalmatia (near)	Northumberland	Feldspathic sandstone	.43	2.4	16.7	19.5	(1)	(1)
10429	Mount Carmel	do.	Quartzite	.53	3.3	12.1	19.0	13	(1)
9812	Holmesburg	Philadelphia	Biotite gneiss	.58	(1)	(1)	19.0	7	(1)
11410	do.	do.	do.	(1)	(1)	(1)	18.7	7	(1)
11190	Shohola	Pike	Feldspathic sandstone	.63	3.2	12.5	16.7	12	(1)
10345	Confluence	Somerset	Calcareous sandstone	.34	3.6	11.1	16.7	7	(1)

RHODE ISLAND.

10171	Lincoln	Providence	Granite gneiss	170	0.17	10.3	18.7	12	20
10248	East Providence	do.	Feldspathic sandstone	168	.59	11.1	18.0	12	16
10467	Westerly	Washington	Granite	161	.37	10.3	18.7	9	(1)
11398	do.	do.	Biotite granite	31,450	.37	16.7	19.3	11	(1)
12445	do.	do.	Granite	18,260	.56	(1)	18.7	15	(1)

*Test not made.

TABLE I.—Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918—Continued.

SOUTH CAROLINA.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, per square inch.	Weight per cubic foot.	Absorption, pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
10531	Rion.....	Fairfield.....	Biotite granite.....	25,540	165	0.59	4.4	9.1	18.3	8	(1)
11417	Winnboro.....	do.....	do.....	22,970	(1)	(1)	(1)	(1)	18	7	(1)
10131	Greenville (17 miles from).....	Greenville.....	Granite.....	(1)	165	.82	4.4	9.1	18.7	8	18
10120	Greenville.....	do.....	Hornblende gneiss.....	(1)	172	.68	8.0	5.0	17.0	6	40
10170	Beverly.....	Pickens.....	Biotite gneiss.....	(1)	166	.75	4.1	9.8	17.7	4	20
11617	Columbia (near).....	Richland.....	Granite.....	21,500	165	.99	3.1	12.9	18.0	8	(1)
12380	Spartanburg.....	Spartanburg.....	Biotite granite.....	8,620	165	.57	6.8	5.9	18.5	6	(1)

SOUTH DAKOTA.

10108	Dell Rapids.....	Minnehaha.....	Quartzite.....	(1)	165	0.41	2.8	14.3	19.3	17	5
10894	Sioux Falls.....	do.....	do.....	(1)	163	.27	1.4	28.6	19.3	17	(1)
10895	do.....	do.....	Olivine diabase.....	(1)	190	.37	2.7	14.8	18.7	18	16
10896	Rowena.....	do.....	Quartzite.....	(1)	164	.28	2.7	14.8	19.3	17	(1)

TENNESSEE.

9992	Maryville.....	Blount.....	Argillaceous limestone.....	(1)	168	0.40	3.8	10.5	16.7	6	49
9993	do.....	do.....	Limestone.....	(1)	168	.30	4.3	9.3	15.7	5	39
10292	New Tazewell.....	Claborne.....	Siliceous limestone.....	(1)	171	1.84	4.2	9.5	13.3	8	31
10326	Harrigate (near).....	do.....	Dolomite.....	(1)	174	.92	3.2	12.5	16.0	14	19
10327	Harrigate.....	do.....	do.....	(1)	171	1.86	3.6	11.1	13.3	7	21
10446	New Tazewell (near).....	do.....	do.....	(1)	172	1.20	4.1	9.8	15.3	9	42
10581	New Tazewell.....	do.....	Siliceous dolomite.....	(1)	170	1.93	4.1	9.8	15.2	9	18
10483	Jamestown.....	Fentress.....	Sandstone.....	(1)	145	3.97	10.8	3.7	15.0	4	(1)
11521	Ashbury.....	Knox.....	Marble.....	16,030	169	.30	6.0	6.7	13.3	2	(1)
11519	Knoxville.....	do.....	do.....	(1)	169	.13	7.0	5.7	13.0	3	(1)
11522	do.....	do.....	do.....	9,230	168	.11	(1)	(1)	13.6	4	(1)
11523	do.....	do.....	do.....	(1)	168	.17	6.2	6.5	13.0	3	(1)
11524	do.....	do.....	do.....	29,000	168	.20	3.5	7.3	13.0	3	(1)
1324	do.....	do.....	Dolomite.....	(1)	178	.20	4.1	9.8	16.0	11	49
9887	Nasoot.....	Madisonville.....	Ferruginous sandstone.....	(1)	178	.41	4.0	10.0	17.3	8	(1)
10313	Madisonville.....	Monroe.....	Siliceous limestone.....	(1)	173	.46	6.3	6.4	16.7	9	29
10316	do.....	do.....	do.....	(1)	169	.46	6.3	6.4	16.7	9	29

TEXAS.

VERMONT.

10317	do.	do.	Limestone.	(1)	167	.77	8.3	4.8	16.7	9	33
10318	do.	do.	do.	(1)	171	.33	4.2	9.5	17.3	8	26
10323	do.	do.	Crystalline limestone.	(1)	168	.33	6.0	6.6	13.3	5	49
10411	(1)	do.	Siliceous dolomite.	(1)	174	1.36	3.3	12.1	15.7	18	29
9734	(1)	Pickett.	Argillaceous dolomite.	(1)	168	2.65	4.3	9.3	13.2	12	55
11520	(1)	Knoxville.	Marble.	(1)	168	.12	5.5	7.3	13.6	5	(1)
11525	(1)	Luttrell.	do.	(1)	170	.17	6.9	5.8	12.3	5	(1)
11526	(1)	Amarco.	do.	(1)	168	.25	6.1	6.6	12.6	3	(1)

10044	(2)	Grayson.	Clay limestone.	(1)	134	12.80	(1)	(1)	0.0	2	(1)
12488	Longview.	Grogg.	Ferruginous conglomerate.	(1)	153	9.74	25.8	1.6	9.0	3	47
12489	do.	do.	Ferruginous sandstone.	(1)	178	4.89	13.7	2.9	13.5	6	(1)
12490	do.	do.	do.	(1)	150	7.21	13.9	2.8	11.3	3	81
12491	Gladevater.	do.	do.	(1)	143	9.06	16.6	2.4	3.8	4	28
11347	Bowie.	Montagne.	Quartz conglomerate.	(1)	148	4.34	21.6	1.9	(1)	(1)	(1)
11395	Chico (near)	Wise.	Limestone.	(1)	169	.30	5.7	7.0	14.3	4	46

12190	Hardwick.	Caledonia.	Biotite granite.	(1)	165	1.11	(1)	(1)	17.0	8	(1)
10848	Burlington.	Chittenden.	Siliceous dolomite.	(1)	163	.26	3.7	11.1	16.7	13	38
11191	Barre.	Orleans.	Siliceous limestone.	(1)	171	.46	3.0	13.3	17.3	9	96
9673	do.	Washington.	Biotite granite.	(1)	165	.37	2.8	14.3	19.0	9	19
12200	do.	do.	do.	(1)	165	.47	(1)	(1)	18.0	11	(1)
12200	do.	Windsor.	Granite.	(1)	164	.52	(1)	(1)	18.0	11	(1)
11488	Prodor.	Rutland.	Serpentine marble.	(1)	171	.22	(1)	(1)	18.0	16	(1)
11489	do.	do.	Variegated marble.	(1)	177	.17	(1)	(1)	16.7	6	(1)
11490	do.	do.	Black marble.	(1)	171	.26	4.6	8.7	14.3	3	(1)
11491	do.	do.	Marble.	(1)	170	.55	5.9	6.8	11.0	9	(1)
11492	do.	do.	do.	(1)	167	.55	(1)	(1)	(1)	(1)	(1)
11493	do.	do.	do.	(1)	168	.56	16.9	2.4	(1)	2	(1)
11494	do.	do.	do.	(1)	168	.31	7.2	5.6	11.0	2	(1)
11495	do.	do.	do.	(1)	167	.40	3.3	4.3	7.7	2	(1)
11496	do.	do.	do.	(1)	168	.39	10.6	3.8	6.7	3	(1)
11497	do.	do.	do.	(1)	168	.46	(1)	(1)	(1)	3	(1)
11498	do.	do.	do.	(1)	168	.52	6.4	6.2	8.7	3	(1)
11499	do.	do.	do.	(1)	168	.32	(1)	(1)	11.7	3	(1)
11500	do.	do.	do.	(1)	168	.28	7.8	5.1	9.0	3	(1)
11501	do.	do.	do.	(1)	168	.36	4.8	8.3	11.7	4	(1)
11502	do.	do.	do.	(1)	168	.41	7.2	5.5	7.0	3	(1)
11503	do.	do.	Siliceous marble.	(1)	177	.78	(1)	(1)	17.6	24	(1)
11528	do.	do.	Marble.	(1)	168	.45	(1)	(1)	7.3	4	(1)

¹ Test not made.² Exact locality not known.

TABLE I.—*Results of physical tests of road-building rock from the United States and Canada from Jan. 1, 1916, to Jan. 1, 1918—Continued.*

VIRGINIA.				Crushing strength, pounds per square inch.	Weight cubic foot.	Absorption, pounds per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Cementing value.
Serial No.	Town or city.	County.	Name of material.								
9928	(1).....	Albemarle.	Biotite gneiss.....	(2)	175	1.62	5.3	7.5	17.6	7	36
9927	(1).....	do.	Hornblende gneiss.....	(2)	193	.98	3.5	11.4	16.3	9	47
9926	(1).....	do.	Biotite gneiss.....	(2)	181	.57	5.1	7.8	18.7	7	63
11376	(1).....	do.	Sericite-epidote schist.....	(2)	165	.69	5.0	8.0	18.3	7	(2)
11377	(1).....	do.	Biotite gneiss.....	(2)	173	1.21	5.4	7.4	18.7	3	(2)
10253	(1).....	do.	Granite gneiss.....	(2)	171	.75	5.4	7.4	17.3	5	24
10172	Charlottesville.	Allegany.	Siliceous limestone.....	(2)	166	.48	2.5	16.0	17.6	10	48
9891	Clifton Forge.	Campbell.	Quartzite schist.....	(2)	159	1.34	12.0	3.3	(2)	(2)	8
9904	Lone Jack Station.	do.	Aplite granite.....	(2)	165	.53	5.4	7.4	18.7	7	5
11551	do.	do.	Quartz.....	(2)	162	.71	10.9	3.7	(2)	(2)	(2)
11565	Boeck.	do.	do.	(2)	165	.33	15.0	2.7	(2)	(2)	(2)
11779	Halsey (near).	do.	Hornblende epidioite.....	(2)	198	.35	3.9	10.2	16.7	9	(2)
10344	Lynchburg.	do.	Quartzite.....	25, 885	160	1.20	4.3	9.3	18.6	14	(2)
11251	Lynchburg (near).	do.	Quartz.....	(2)	165	.20	5.8	6.9	(2)	(2)	(2)
11362	do.	do.	Hornblende gneiss.....	(2)	178	.80	10.3	3.9	19.3	8	(2)
9819	Clift View.	Carroll.	Hornblende schist.....	(2)	184	.71	4.4	9.1	18.3	14	31
9820	do.	do.	Altered hornblende gneiss.....	(2)	181	1.60	15.8	2.5	14.3	5	109
10115	Boston.	Culpeper.	Altered rhyolite.....	(2)	168	.84	4.7	8.5	19.0	(2)	(2)
11394	Clintwood.	Dickenson.	Feldspathic sandstone.....	(2)	158	3.14	5.4	7.4	5.0	6	44
9919	Warrenton.	Fauquier.	Amphibolite.....	(2)	187	.76	4.6	8.7	(2)	(2)	120
9920	do.	do.	do.	(2)	181	2.44	5.9	6.7	(2)	(2)	43
9870	do.	do.	Epidote chlorite schist.....	(2)	185	1.46	3.6	11.1	(2)	(2)	(2)
10304	do.	do.	do.	(2)	185	.63	3.5	12.9	(2)	(2)	(2)
11266	Bluff City.	Giles.	Quartzite.....	(2)	165	.89	3.1	11.1	(2)	(2)	(2)
11248	do.	do.	Siliceous dolomite.....	(2)	175	.33	3.6	11.1	(2)	(2)	(2)
11412	Forest Hills.	Henrico.	Biotite granite.....	19, 270	(2)	(2)	(2)	(2)	18.0	6	17
10069	Hamilton (3 mile east of).	Loudoun.	Amphibolite.....	(2)	178	.49	8.9	10.3	17.3	10	27
10999	Luray.	Page.	Argillaceous limestone.....	(2)	167	.75	5.4	7.4	14.3	5	35
10298	Buckland.	Prince William.	Diabase.....	(2)	178	1.75	(2)	(2)	17.3	(2)	35
11549	Buena Vista (near).	Rockbridge.	Limestone.....	(2)	176	.78	2.7	14.8	18.3	23	17
11550	do.	do.	Argillaceous limestone.....	(2)	173	.21	2.4	16.7	17.0	11	22
11719	Castlewood.	Russell.	Limestone.....	(2)	171	.15	3.1	10.3	17.3	13	35
10930	Gale.	Scott.	Argillaceous limestone.....	(2)	168	.38	4.3	9.7	16.9	3	25
11272	Front Royal.	Warren.	Limestone.....	(2)	171	.57	4.3	9.3	14.3	3	28
10780	Wise.	Wise.	Sandstone.....	(2)	158	2.10	4.5	8.8	18.7	10	(2)

WASHINGTON.

10239	Cook (3 miles north of).	Skamania.....	Basalt.....	(2)	177	0.92	2.6	15.4	18.3	24	14
WEST VIRGINIA.											
11708	Martinsburg.....	Berkeley.....	Limestone.....	(2)	170	0.19	5.9	6.8	14.0	3	15
10064	Martinsburg (south of).	do.....	Dolomite.....	(2)	178	.31	3.6	11.1	16.3	10	29
10069	Butts Store.....	do.....	Feldspathic sandstone.....	(2)	140	3.45	7.2	5.6	18.7	(2)	8
10073	Hedgeville (west of).	do.....	do.....	(2)	165	1.62	2.8	14.3	16.7	(2)	61
10087	Tonahawk (north of).	do.....	Sandstone.....	(2)	156	1.66	7.9	5.1	(2)	(2)	23
10062	Inwood (near).	do.....	do.....	(2)	144	3.19	16.6	2.4	19.3	2	17
10063	Forreldge.....	do.....	Limestone.....	(2)	168	1.61	6.2	6.5	14.0	4	56
10065	Blairton (near).	do.....	Argillaceous limestone.....	(2)	168	1.61	5.1	7.8	16.7	6	28
10067	Berkeley Station.....	do.....	Limestone.....	(2)	168	.31	6.3	9.1	17.3	4	34
10066	Jones Spring.....	do.....	Siliceous limestone.....	(2)	168	.31	4.4	9.1	17.3	9	44
10068	Bedington (east of).	do.....	Argillaceous limestone.....	(2)	172	.19	4.9	8.2	16.0	10	33
10070	Bunkers Hill.....	do.....	Limestone.....	(2)	168	.24	5.1	7.8	16.0	4	34
10071	Nipetown.....	do.....	do.....	(2)	168	.43	4.2	9.5	15.0	3	32
10072	Spring Mills.....	do.....	do.....	(2)	168	.27	4.2	9.5	15.0	4	45
10074	Gerrardstown.....	do.....	Argillaceous limestone.....	(2)	172	.46	6.5	6.2	15.7	(2)	22
10075	Bedington (east of).	do.....	do.....	(2)	168	.32	5.6	7.1	(2)	(2)	29
10076	Van Clevessville (south of).	do.....	do.....	(2)	168	.36	5.0	8.0	17.0	9	(2)
10077	Dorkesville.....	do.....	Limestone.....	(2)	168	.31	5.0	8.0	15.0	4	33
10078	Tonahawk.....	do.....	Siliceous limestone.....	(2)	168	.27	4.5	8.9	18.3	15	47
10079	Falling water.....	do.....	Limestone.....	(2)	168	1.27	4.7	8.5	16.7	8	20
10080	Little Georgetown.....	do.....	Argillaceous limestone.....	(2)	175	.37	6.5	6.2	18.7	10	24
10081	Jones Spring.....	do.....	Crystalline limestone.....	(2)	168	.37	5.7	7.0	14.0	4	27
10082	Falling water (near).	do.....	Limestone.....	(2)	168	.39	5.6	7.1	(2)	(2)	25
10083	Falling water.....	do.....	Chert and limestone (mixed).	(2)	(2)	(2)	4.7	8.5	(2)	(2)	23
10084	Blairton.....	do.....	Limestone.....	(2)	168	.23	5.9	6.7	16.3	5	20
10085	Cumbo.....	do.....	do.....	(2)	172	.32	4.6	8.7	16.7	4	32
10086	Martinsburg (south of).	do.....	do.....	(2)	168	.56	5.8	6.9	18.0	5	39
10102	Martinsburg.....	do.....	do.....	(2)	(2)	(2)	5.2	7.7	16.7	6	(2)
10511	Scherr.....	do.....	do.....	(2)	166	.60	5.4	7.4	(2)	(2)	31
9925	Renick.....	Grant.....	Argillaceous limestone.....	(2)	168	.66	3.8	10.5	16.3	8	41
9972	Fort Spring.....	Greenbrier.....	do.....	(2)	168	.18	4.1	9.8	15.7	9	57
11915	Ronceverte.....	do.....	Limestone.....	(2)	168	.18	4.3	9.3	16.7	11	31
11715	White Sulphur Springs.....	do.....	Feldspathic sandstone.....	(2)	164	.84	3.2	12.3	18.3	14	(2)
11763	(1)	do.....	do.....	(2)	165	.82	3.0	13.3	18.7	14	(2)
10103	Kearneyville.....	do.....	do.....	(2)	(2)	(2)	2.7	14.8	14.0	6	(2)
11609	(1)	Jefferson.....	Limestone.....	(2)	177	.40	4.5	8.9	16.7	6	18
9966	Greer.....	do.....	Dolomite.....	(2)	168	.73	4.7	8.5	15.7	9	63
9967	do.....	Monongalia.....	Argillaceous limestone.....	(2)	168	.59	4.7	8.5	15.7	9	63

2 Test not made.

1 Exact locality not known.

TABLE I.—Results of physical tests of road-building rock from the United States and Canada from Jan. 1 1916, to Jan. 1, 1918—Continued.

WEST VIRGINIA—Continued.

Serial No.	Town or city.	County.	Name of material.	Crushing strength, pounds per square inch.	Weight per cubic foot.	Absorption, per cubic foot.	Per cent of wear.	French coefficient of wear.	Hardness.	Toughness.	Commenting value.
9068	Greer	Monongalia	Argillaceous limestone	(1)	168	0.73	4.8	8.3	14.0	9	37
9069	do.	do.	Siliceous limestone	(1)	168	.56	3.0	13.3	16.7	10	47
10348	Albright (near)	Preston	Sandstone	(1)	154	1.88	8.1	4.9	17.3	5	(1)
10349	Albright	do.	Ferruginous sandstone	(1)	160	2.40	4.0	10.0	15.3	9	(1)
11471	Lester (near)	Raleigh	Sandstone	(1)	150	3.60	9.5	4.2	13.3	5	(1)
11472	Beckley	do.	do.	(1)	156	3.07	3.1	12.9	15.0	6	(1)
11473	Surveyor	do.	do.	(1)	155	2.74	4.2	9.5	18.0	6	(1)
11544	Ghent	do.	do.	(1)	158	2.32	4.2	9.5	17.3	8	(1)
11545	Cherry Glade	do.	do.	(1)	152	3.14	8.2	4.9	16.7	7	(1)
11546	Daniels	do.	do.	(1)	155	2.24	4.9	8.3	16.7	7	(1)
11547	Shady Springs	do.	do.	(1)	156	2.44	4.8	8.2	18.0	6	(1)
11736	Bolt	do.	Quartz conglomerate	(1)	131	3.23	31.6	1.3	(1)	(1)	4
11130	Trap Hill District	do.	Sandstone	(1)	134	3.69	3.9	10.3	16.6	9	(1)
10336	Spencer (near)	Roane	Feldspathic sandstone	(1)	156	3.52	12.3	3.3	8.7	4	32
10509	Davis	Tucker	Siliceous limestone	(1)	167	.05	3.7	10.8	14.3	10	30
10510	do.	do.	Argillaceous limestone	(1)	168	.12	5.0	8.0	16.3	6	37

WISCONSIN.

11971	Springdale	Dane	Dolomite	(1)	172	1.27	3.7	10.8	16.0	12	21
9999	Berlin	Green Lake	Rhyolite	(1)	165	.16	1.9	21.3	19.0	25	15
10168	Buffalo	Marquette	Altered syenite	(1)	167	.13	2.2	18.2	19.3	30	13
10014	Wauwatosa	Milwaukee	Argillaceous dolomite	(1)	168	2.11	3.7	2.8	14.7	8	(1)
11129	Wauwatosa (near)	do.	do.	16, 700	168	2.01	3.8	10.5	13.3	11	62
11367	do.	do.	do.	20, 370	163	3.2	2.1	19.0	14.0	8	18
10986	Wells	Monroe	Argillaceous limestone	(1)	162	2.79	4.8	8.3	18.0	9	(1)
9970	Black Creek	Calcaireous sandstone	(1)	178	.58	4.6	4.6	8.7	14.7	5	31
9971	do.	Outagamie	Dolomite	(1)	178	.53	4.1	9.8	15.3	8	31
10022	Belgium	Ozaukee	Argillaceous dolomite	(1)	175	1.15	7.4	5.5	14.3	8	30
11625	Mequon	do.	Dolomite	22, 750	174	1.09	3.4	11.8	12.3	7	16
11638	do.	do.	do.	(1)	178	1.13	7.1	7.1	15.0	7	(1)
11447	Red Granite	Wausara	Granite	(1)	165	1.33	5.6	28.5	19.3	14	3
10159	Grand Rapids	Wood	Sandstone	(1)	153	1.91	3.3	12.1	18.3	5	(1)
10028	(?)	(?)	Dolomite	(1)	168	1.05	7.1	5.6	13.3	6	41

CANADA.

11548	Ottawa (south of).....	Province of Ontario...	Argillaceous dolomite.....	(1)	166	3.05	4.8	8.3	13.7	4	18
11549	Ottawa (east of).....	do.....	Limestone.....	(1)	167	.56	4.9	8.2	12.0	4	27
9746	Wollard.....	do.....	Cherty limestone.....	(1)	165	.41	3.9	10.3	18.3	13	82
11550	Frail (near).....	Province of Quebec...	Diabase.....	(1)	184	.54	2.4	16.7	18.0	13	28
10017	Montreal.....	do.....	Nephelitic syenite.....	(1)	156	.60	2.2	18.2	18.7	18	22
10332	Wellesley Island.....	do.....	Biotite granite.....	(1)	165	.28	2.9	13.8	18.0	10	(1)

Test not made.

2 Exact locality unknown.

TABLE II.—*Results of compression tests of rock, made prior to Jan. 1, 1916.*

ARKANSAS.

Serial No.	Locality.	County.	Name.	Crushing strength, pounds per square inch.
6331	Bald Knob.....	White.....	Sandstone.....	19,860

CONNECTICUT.

9791	Oneco.....	Windham.....	Biotite granite.....	16,635
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ILLINOIS.

4422	Embarras.....	Coles.....	Limestone.....	17,300
5509	Thornton.....	Cook.....	Dolomite.....	23,060
6053	do.....	do.....	do.....	16,880
8711	Hillside.....	do.....	Argillaceous dolomite.....	15,730
4660	Tunnel Hill.....	Johnson.....	Sandstone.....	19,150
7509	Beevesville.....	do.....	Argillaceous limestone.....	23,780
7510	do.....	do.....	do.....	28,400
4764	Kankakee.....	Kankakee.....	Dolomite.....	20,610
5550	do.....	do.....	do.....	17,710
6088	do.....	do.....	Argillaceous dolomite.....	20,830
6165	do.....	do.....	Dolomite.....	11,660
6865	do.....	do.....	do.....	13,500
7298	do.....	do.....	Argillaceous dolomite.....	25,850
7299	do.....	do.....	do.....	20,000
7300	do.....	do.....	do.....	19,800
7301	do.....	do.....	do.....	19,700
7302	do.....	do.....	Dolomite.....	17,050
7871	Lehigh.....	do.....	Argillaceous Dolomite.....	16,700
4421	Alton.....	Madison.....	Limestone.....	15,100
7422	Brookville.....	Ogle.....	Argillaceous dolomite.....	18,640
7423	do.....	do.....	do.....	18,180
5549	Anna.....	Union.....	Limestone.....	19,510

INDIANA.

5534	Loganport.....	Cass.....	Limestone.....	20,350
4655	Greensburg.....	Decatur.....	Dolomite.....	17,960
4658	St. Paul.....	do.....	Limestone.....	18,400
4690	Westport.....	do.....	Dolomitic limestone.....	20,000
4659	St. Paul.....	do.....	do.....	20,510
5088	do.....	do.....	Limestone.....	19,800
4197	Mitchell.....	Lawrence.....	Argillaceous dolomite.....	12,250
5027	Bedford.....	do.....	Limestone.....	6,900
5029	do.....	do.....	do.....	6,450
3368	Greencastle.....	Putman.....	do.....	16,000
5737	Osgood.....	Ripley.....	do.....	14,470
4657	Wabash.....	Wabash.....	Dolomitic limestone.....	18,790

IOWA.

5525	Cedar Rapids.....	Linn.....	Dolomite limestone.....	19,950
5526	La Grande.....	Marshall.....	do.....	14,850

KENTUCKY.

5552	Princeton.....	Caldwell.....	Dolomitic limestone.....	23,860
7688	Cedar Bluff.....	do.....	Argillaceous limestone.....	25,720
5921	Limestone.....	Carter.....	Limestone.....	14,900
5922	Carter.....	do.....	Siliceous limestone.....	13,400

TABLE II.—Results of compression tests of rocks, made prior to Jan. 1, 1916—Contd.

MAINE.

Serial No.	Locality.	County.	Name.	Crushing strength, pounds per square inch.
7438	Swans Island.....	Hancock.....	Biotite granite.....	18,400
8745	Vinal Haven.....	Knox.....	Granite.....	20,020
8768	St. George.....	do.....	do.....	22,800
8769	Vinal Haven.....	do.....	do.....	20,930
8781	St. George.....	do.....	do.....	18,780
9865	do.....	do.....	do.....	17,150
9996	Long Cove.....	do.....	do.....	17,540
9445	Vinal Haven.....	do.....	Biotite granite.....	21,220
10366	St. George.....	do.....	do.....	27,050
7439	Frankford.....	Waldo.....	do.....	20,600

MARYLAND.

5611	Mount Savage Junction.	Allegany.....	Siliceous limestone.....	34,930
4884	Frederick.....	Frederick.....	Limestone.....	17,580
5694	Havre de Grace.....	Harford.....	Gneissoid granite.....	34,410
5695	do.....	do.....	Sericite gneiss.....	20,090
5696	do.....	do.....	Gneissoid granite.....	21,670
5697	do.....	do.....	Amphibolite.....	34,380
5698	do.....	do.....	Gneissoid granite.....	35,210
5699	do.....	do.....	do.....	22,190

MASSACHUSETTS.

6891	Rockport.....	Essex.....	Biotite granite.....	22,370
6892	do.....	do.....	do.....	23,610
6893	do.....	do.....	do.....	22,670
6894	do.....	do.....	do.....	21,600
8796	do.....	do.....	do.....	23,830
5671	Westfield.....	Hampden.....	Altered diabase.....	32,850
8862	Westford.....	Middlesex.....	Granite.....	13,980
8874	do.....	do.....	do.....	17,000
8875	do.....	do.....	do.....	16,250
5988	West Auburn.....	Worcester.....	Mica gneiss.....	21,950

MICHIGAN.

9593	Calcite.....	Presque Isle.....	Limestone.....	10,300
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MINNESOTA.

5524	Stockton.....	Winona.....	Argillaceous dolomite.....	16,000
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MISSOURI.

6375	Rochefort.....	Boone.....	Limestone.....	13,900
6377	Sweeney.....	Cooper.....	Argillaceous limestone.....	14,900

NEW YORK.

6457	(1).....	Clinton.....	Plagioclase gneiss.....	18,500
6458	(1).....	do.....	Pyroxene gneiss.....	20,500
8011	(1).....	Dutchess.....	Dolomite.....	34,450
5544	Camelo.....	do.....	do.....	29,050
5872	Akron Junction.....	Erie.....	Cherty limestone.....	16,700
6056	do.....	do.....	do.....	31,180
8577	Gloversville.....	Fulton.....	Biotite gneiss.....	14,585
4157	Alexandria Bay.....	Jefferson.....	Granite.....	21,600
8833	do.....	do.....	do.....	26,180
8902	do.....	do.....	do.....	14,150
9129	do.....	do.....	do.....	14,390
9130	do.....	do.....	Gneissoid granite.....	17,600
7437	do.....	do.....	Granite.....	27,200
8012	(1).....	Rockland.....	Gabbroitic diabase.....	31,300
8013	(1).....	do.....	Siliceous dolomite.....	22,200

¹ Exact locality not known.

TABLE II.—*Results of compression tests of rock, made prior to Jan. 1, 1916—Continued.*

NEW HAMPSHIRE.

Serial No.	Locality.	County.	Name.	Crushing strength, pounds per square inch.
8872	Melford.....	Hillsboro.....	Granite.....	15,050
9010	do.....	do.....	Biotite granite.....	16,640
9011	do.....	do.....	do.....	14,870
9012	do.....	do.....	do.....	18,230
9031	Concord.....	Merrimack.....	Granite.....	16,600
9036	do.....	do.....	do.....	13,420
9037	do.....	do.....	do.....	13,900
8870	do.....	do.....	do.....	15,100

NORTH CAROLINA.

8396	(1).....	Forsythe.....	Granite.....	13,140
8397	(1).....	do.....	Hypersthene gabbro.....	11,880
8682	Spencer Mountain.....	Gaston.....	Feldspathic quartzite.....	31,520
8881	Gastonia.....	do.....	Quartzite.....	17,100
8576	Mooreville.....	Iredell.....	Biotite granite.....	26,000
5373	(1).....	McDowell.....	Sandstone.....	22,600
9038	Wilson.....	Wilson.....	Granite.....	16,070
5956	Stacey.....	Rockingham.....	Granite gneiss.....	23,220
5496	Sansbury.....	Rowan.....	Granite.....	33,750
6071	Bostic.....	Rutherford.....	Biotite gneiss.....	16,100
5497	Mount Airy.....	Surry.....	Granite.....	18,400
7433	do.....	do.....	do.....	15,200
8901	do.....	do.....	do.....	5,100
9048	do.....	do.....	do.....	16,440
8419	Granita (near).....	Wake.....	Biotite granite.....	14,160
3807	Wise.....	Warren.....	Granite.....	18,240
3808	do.....	do.....	do.....	18,560
5374	(1).....	Yancey.....	Quartzite.....	12,900

OHIO.

4694	Osborne.....	Clark.....	Dolomitic limestone.....	8,690
4695	Springfield.....	do.....	Dolomite.....	18,960
9282	Cleveland.....	Cuyahoga.....	Granite.....	31,790
9283	do.....	do.....	do.....	27,900
9284	do.....	do.....	do.....	24,790
9285	do.....	do.....	do.....	26,990
9459	do.....	do.....	do.....	24,900
4378	Sandusky.....	Erie.....	Limestone.....	19,400
5554	do.....	do.....	do.....	21,850
5753	Castalia.....	do.....	Dolomitic limestone.....	18,530
6055	do.....	do.....	Limestone.....	20,810
5505	Marble Cliff.....	Franklin.....	do.....	16,750
5506	do.....	do.....	do.....	12,350
5630	Columbus.....	do.....	Ferruginous sandstone.....	21,800
4693	Patterson.....	Hardin.....	Dolomite.....	11,360
5553	Dunkirk.....	do.....	do.....	26,200
4707	Hillsboro.....	Highland.....	Cherty limestone.....	15,590
4656	Clarksfield.....	Huron.....	Calcareous sandstone.....	9,490
8347	Big Springs.....	Logan.....	Argillaceous limestone.....	16,380
6054	Vulcan.....	Lucas.....	Siliceous limestone.....	25,480
6037	Holland.....	do.....	Argillaceous limestone.....	19,430
8402	Toledo, 10 miles west of.....	do.....	Dolomite.....	11,600
6052	White Rock.....	Ottawa.....	do.....	16,620
5556	Bloomville.....	Seneca.....	Limestone.....	20,250
5555	Middleport.....	Van Wert.....	Dolomite.....	25,200

OKLAHOMA.

3388	Granite.....	Greer.....	Granite.....	18,000
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¹ Exact locality not known.

TABLE II.—*Results of compression tests of rock, made prior to Jan. 1, 1916—Continued.*

PENNSYLVANIA.

Serial No.	Locality.	County.	Name.	Crushing strength, pounds per square inch.
5602	Hyndman.....	Bedford	Impure limestone.....	24, 150
5603	do.....	do.....	Siliceous limestone.....	21, 860
5632	Birdsboro.....	Berks	Altered diabase.....	39, 215
8724	Juniata.....	Blair	Argillaceous limestone.....	15, 480
8725	(1).....	do.....	do.....	20, 880
8625	Hazard.....	Carbon	Blast-furnace slag.....	9, 000
7973	(1).....	Chester	Proxene quartzite.....	31, 800
7978	(1).....	do.....	Mica schist.....	23, 500
7979	(1).....	do.....	do.....	23, 900
5578	Salona.....	Clinton	Argillaceous limestone.....	18, 710
7844	(1).....	Dauphin	Siliceous limestone.....	26, 500
8306	(1).....	do.....	Limestone.....	8, 510
8427	(1).....	do.....	do.....	19, 250
8465	(1).....	do.....	Siliceous dolomite.....	9, 640
8049	(1).....	Elk	Ferruginous sandstone.....	14, 150
5771	Indian Creek Station.....	Fayette	Calcareous sandstone.....	37, 740
6097	Bidwell.....	do.....	Limestone.....	13, 450
9347	Connelsville.....	do.....	do.....	26, 050
5604	Water Street.....	Huntingdon	Feldspathic sandstone.....	22, 330
5557	Walford.....	Lawrence	Limestone.....	27, 500
6153	Porter Township.....	Lycoming	Argillaceous limestone.....	28, 580
6154	do.....	do.....	do.....	26, 860
6155	do.....	do.....	do.....	18, 610
6156	do.....	do.....	do.....	22, 930
6157	do.....	do.....	Limestone.....	21, 900
6158	do.....	do.....	do.....	14, 160
7980	Port Allegheny.....	McKean	Feldspathic sandstone.....	9, 680
8022	(1).....	(1).....	Ferruginous sandstone.....	12, 130
8023	(1).....	(1).....	do.....	14, 000
8024	(1).....	(1).....	do.....	12, 480
3243	McSpadden.....	Somerset	Sandstone.....	26, 900
5830	Prompton.....	Wayne	Feldspathic sandstone.....	26, 340
5605	Blairsville Intersection.....	Westmoreland	Siliceous limestone.....	32, 560
7428	York.....	York	Dolomitic marble.....	27, 400

RHODE ISLAND.

8867	Westerly.....	Washington.....	Granite.....	11, 740
8868	do.....	do.....	do.....	20, 300
8869	do.....	do.....	do.....	20, 750

SOUTH CAROLINA.

8389	Williamstown.....	Anderson.....	Granite.....	12, 990
5568	Rion.....	Fairfield.....	do.....	29, 180
5586a	do.....	do.....	do.....	25, 790
5586b	do.....	do.....	do.....	19, 240
5586c	do.....	do.....	do.....	33, 880

TENNESSEE.

5597	Quarry.....	Carter.....	Limestone.....	22, 750
5502	Straw Plains.....	Jefferson.....	do.....	21, 730
5504	do.....	do.....	do.....	28, 340
5503	do.....	do.....	Dolomite.....	38, 070
6533	Knoxville.....	Knox.....	Marble.....	17, 970

VERMONT.

5543	East Wallingford.....	Rutland.....	Altered diabase.....	16, 800
8553	Barre.....	Washington.....	Granite.....	19, 560

¹ Exact locality not known.

TABLE II.—Results of compression tests of rock, made prior to Jan. 1, 1916—Continued.

VIRGINIA.

Serial No.	Locality.	County.	Name.	Crushing strength, pounds per square inch.
8804	Albert.....	Bedford.....	Granite gneiss.....	13, 820
6796	(1).....	Dinwiddie.....	Granite.....	13, 150
4900A	Broad Run.....	Fauquier.....	Quartz.....	28, 400
4900B	do.....	do.....	Epidosite.....	28, 000
5923	Strathmore.....	Fluvanna.....	Chlorite epidote schist.....	13, 210
5678	Eggleston (near).....	Giles.....	Dolomite.....	45, 690
5924	Boscobel.....	Goochland.....	Granite gneiss.....	13, 550
6615	Korah Station.....	Henrico.....	Biotite granite.....	20, 300
5925	Greenway.....	Nelson.....	Feldspathic quartzite.....	16, 500
5492	Nokesville.....	Prince William.....	Ferruginous sandstone.....	17, 780
5920	Greenlee.....	Rockbridge.....	Dolomitic marble.....	36, 900
5382	Bluff Water Station.....	Rockingham.....	Limestone.....	21, 450
5385	do.....	do.....	do.....	40, 850
5375	St. Paul.....	Russell.....	do.....	17, 600
7217	Burkes Garden.....	Tazewell.....	Dolomitic sandstone.....	21, 500

¹ Exact locality not known.

WEST VIRGINIA.

5365	Berkeley.....	Berkeley.....	Limestone.....	23, 350
5917	Renick.....	Greenbrier.....	Crystalline limestone.....	21, 300
5918	Frazier.....	do.....	Limestone.....	17, 450
5919	Snow Place.....	do.....	do.....	13, 550
7475	Green Spring (east of).....	Hampshire.....	Siliceous limestone.....	34, 400
7476	do.....	do.....	Quartzite.....	15, 050
6109	Spring Hill.....	Kanawha.....	Sandstone.....	12, 400
9132	Fairmont.....	Marion.....	do.....	5, 420
9133	do.....	do.....	do.....	5, 720
9134	do.....	do.....	do.....	6, 080
5610	Sturgis.....	Monongalia.....	Siliceous limestone.....	22, 440
5612	do.....	do.....	Limestone.....	17, 910
5613	do.....	do.....	Argillaceous limestone.....	14, 300
5614	do.....	do.....	Calcareous sandstone.....	29, 840
5615	do.....	do.....	Impure limestone.....	19, 650
5616	do.....	do.....	Argillaceous limestone.....	24, 850
8447	Parkersburg.....	Wood.....	Feldspathic sandstone.....	11, 910

WISCONSIN.

5523	Pebbles.....	Fond du Lac.....	Dolomite.....	32, 600
3448	Amberg.....	Marinette.....	Biotite granite.....	20, 000
8656	Lannon.....	Waukesha.....	Dolomite.....	23, 020

TABLE III.—Geographical distribution of rock samples tested to Jan. 1, 1918.

Alabama.....	32	Kansas.....	33	New Jersey.....	82	Utah.....	13
Arizona.....	4	Kentucky.....	47	New Mexico.....	1	Vermont.....	55
Arkansas.....	20	Louisiana.....	8	New York.....	155	Virginia.....	439
California.....	103	Maine.....	103	North Carolina.....	162	Washington.....	213
Colorado.....	28	Maryland.....	126	Ohio.....	173	West Virginia.....	193
Connecticut.....	56	Massachusetts.....	220	Oklahoma.....	52	Wisconsin.....	154
Delaware.....	31	Michigan.....	97	Oregon.....	14	Wyoming.....	3
Florida.....	13	Minnesota.....	21	Pennsylvania.....	625	Canada.....	55
Georgia.....	272	Mississippi.....	14	Rhode Island.....	43	Cuba.....	4
Idaho.....	10	Missouri.....	43	South Carolina.....	33	Porto Rico.....	12
Illinois.....	134	Montana.....	4	South Dakota.....	15		
Indiana.....	185	Nebraska.....	12	Tennessee.....	85	Total.....	4, 325
Iowa.....	25	New Hampshire.....	34	Texas.....	69		

TABLE IV.—*General limiting test values for broken stone.*

Type of construction.	Traffic. ¹	Limiting values.		
		French coefficient of wear.	Toughness.	Hardness.
Water-bound macadam, plain or with dust palliative treatment.	Light.....	5 to 8.....	5 to 9.....	10 to 17.
	Moderate.....	9 to 15.....	10 to 18.....	14 or over.
	Heavy.....	16 or over..	19 or over..	17 or over.
Macadam with bituminous carpet.....	Light to moderate.....	5 or over..	5 or over..	(2)
Bituminous macadam with seal coat....	Moderate to heavy.....	7 or over..	10 or over..	
Bituminous concrete.....	Light to moderate.....	7 or over..	7 or over..	(2)
	Moderate to heavy.....	10 or over..	13 or over..	
Binder course for sheet asphalt or Topeka type.	Any.....	7 or over..	6 or over..	(2)
Portland cement concrete.....	Moderate to heavy.....	7 or over..	8 or over..	
Stone paving block ³	Any.....	8 or over..	9 or over..	16 or over.
Broken-stone foundations.....	} ...do.....	3 or over..	3 or over..	8 or over.
Cement-concrete foundations.....				

¹ Light traffic is assumed as less than 100 vehicles per day, moderate traffic between 100 and 250 vehicles, and heavy traffic over 250 vehicles per day.

² Numerous tests have shown that limits for hardness are unnecessary if the material possesses the required French coefficient of wear and toughness.

³ Crushing strength, 20,000 pounds or over per square inch, is frequently required.

Cementing values should in all cases show over 25 if material is to be used in water-bound macadam construction.

Granites, gneisses, schists, sandstones, and quartzites should not, in general, be used in the wearing course of water-bound macadam roads. Shales and slates should never be used in this connection. Cementing value tests have therefore been discontinued on these materials.

For further details and explanation of results in this table and also for tests on all materials to January 1, 1916, see United States Department of Agriculture Bulletin No. 370.

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