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of Standards

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#### GENERAL INFORMATION

Some of these papers have appeared in the publications of the National Bureau of Standards, the National Advisory Committee for Aeronautics, and other scientific and technical journals. Unless specifically stated, these publications are not obtainable from the National Bureau of Standards.

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For papers in other scientific or technical journals, the name of the journal or of the organization publishing the article is given in abbreviated form, with the volume number (underscored), page and year of publication. The Bureau cannot supply copies of these journals, nor reprints from them, and has no information on where they may be

purchased. Usually they can be consulted in technical libraries.

A duplicating service, through which copies of papers may be purchased, is maintained by the Engineering Societies' Library, 29 West 39th Street, New York, N. Y.

ABBREVIATIONS  
National Bureau of Standards

T = "Technologic Paper." T1 to T370. In 1928, these papers were superseded by the "Bureau of Standards Journal of Research."

RP = "Research Paper." These are reprints of articles in the "Bureau of Standards Journal of Research" (BS J. Research) and the Journal of Research of the National Bureau of Standards (J. Research NBS), the latter being the title of the periodical since July 1934 (volume 13, number 1). When requesting a Journal at a library the volume number should be given as a reference.

C = "Circular."

M = "Miscellaneous Publication."

BMS = "Building Materials and Structures."

LC = "Letter Circular." Free on request to the National Bureau of Standards.

National Advisory Committee for Aeronautics

TR = "Technical Report." Those reports which are out of print will be found in the Annual Reports. These Reports are in public libraries and in the Office of Aeronautical Intelligence, National Advisory Committee for Aeronautics, Washington, D. C.

TN = "Technical Note." Free on request to the National Advisory Committee for Aeronautics.

Circular C24 and Supplements (1901-1936) give a list of the publications of the National Bureau of Standards and is sold by the Superintendent of Documents for 55 cents. New publications are reviewed each month in the Technical News Bulletin; Subscription, 50 cents per year.

## APPARATUS

(See, also, Proving Rings and Strain Gages)

<u>Title</u>	<u>Series</u>	<u>Price</u>
An extensometer comparator, A. H. Stang and L.R. Sweetman. J. Research NBS <u>15</u> , 199 (1935). Mechanical World and Engineering Record (Manchester, England) <u>XCVIII</u> , 473 (1935)-----	RP322	5¢
A simple fixture for testing belting. Am. Machinist (New York, N.Y.), <u>60</u> , 722 (1924). -----		
Cable reel of simple design. H.L. Whittemore. Machinery (New York, N.Y.), <u>30</u> , 925 (1924)		

## AREA, CROSS-SECTIONAL

The areas and tensile properties of deformed concrete reinforcement bars. A.H. Stang, L.R. Sweetman, and C. Gough. BS J. Research <u>2</u> , 509 (1932) -----	RP486	OP
Determination of cross-sectional areas of structural members. J.A. Miller, J. Research NBS <u>23</u> , 521 (1939) -----	RP1258	10¢

## BEAMS

Discussion of tests of I-beams in torsion. L. B. Tuckerman. Eng. News-Record, <u>93</u> , 382 (1924)		
Note on plane strain. W.R. Osgood. J. Applied Mechanics (New York, N.Y.), <u>2</u> , A-26 (1942)		
A theory of flexure for beams with nonparallel extreme fibers. W.R. Osgood. Trans. ASME <u>61</u> , A-122 (1939).		

## BEARINGS

The friction and carrying capacity of ball and roller bearings. H.L. Whittemore and S.N. Petrenko. (1921) -----	T201	OP
Accelerated service test of pintle bearings. A.H. Stang and L.R. Sweetman. J. Research NBS <u>15</u> , 591 (1935) -- -----	RP354	5¢
Tests of ball bearings for rotating beam fatigue machines. L.B. Tuckerman and C.S. Aitchison. Am. Machinist (New York, N.Y.) <u>61</u> , 369 (1924).		



## BOLTS

<u>Title</u>	<u>Series</u>	<u>Price</u>
Note on the electrical resistance of contacts between nuts and bolts. F. Wenner, G.W. Nussbaum and B.C. Cruickshanks. 'BS' J. Research <u>5</u> , 757 (1930) -----	RP227	OP
The relation of torque to tension for thread-locking devices. H.L. Whittemore, G.W. Nussbaum and E.O. Seaquist. BS J. Research <u>7</u> , 945 (1931) -----	RP386	30¢
Impact and static tensile properties of bolts. H.L. Whittemore, E.O. Seaquist and G.W. Nussbaum. J. Research NBS <u>14</u> , 139 (1935) --	RP763	10¢
Experimental use of liquid air and explosives for tightening body-bound bolts. H.L. Whittemore. Am. Machinist (New York, N.Y.) <u>56</u> , 524 (1922).		
The strength of bolt threads as affected by inaccurate machining. G.F. Dening. Mech. Engineering (New York, N.Y.), <u>45</u> , 583 (1923).		

## CALIBRATION OF TESTING MACHINES

(See, also, Proving Rings)

A new dead weight testing machine of 100,000 lb capacity. L.B. Tuckerman, F.L. Whittemore and S.N. Petrenko. BS J. Research <u>4</u> , 281 (1930). Metals and Alloys (New York, N.Y.), <u>1</u> , 661 (1930) -----	RP147	OP
Calibration of testing machines under dynamic loading. B.L. Wilson and C. Johnson. J. Research NBS <u>19</u> , 41 (1937) -----	RP1009	OP

## COLUMNS

(See, also, Plates, Stresses from Strain-Gage Readings, and Structures)

Tests of large bridge columns. J.H. Griffith and J.G. Bragg. (1913) -----	T101	OP
Results of some compressive tests of structural steel angles. A.H. Stang and L.R. Strickenberg. Tech. Pap. BS <u>16</u> , 651 (1922) -----	T218	OP
Compressive strength of column web plates and wide web columns. R.S. Johnston. Tech. Pap. BS <u>20</u> , 733 (1926) -----	T327	OP

## COLUMNS (Continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Tests of large columns with H-shaped section. L. B. Tuckerman and A. H. Stang. Tech. Pap. DS <u>21</u> , 1 (1926)-----	T328	40¢
Transverse tests of H-section column splices. J. H. Edwards, H. L. Whittemore and A. H. Stang. BS J. Research <u>4</u> , 395 (1930). J. Am. Welding Soc. (New York, N. Y.), <u>2</u> , 7 (1930)-----	RP157	OP
Column curves and stress-strain diagrams. W. R. Osgood. BS J. Research <u>2</u> , 571 (1932)-----	RP492	5¢
Contribution to the design of compression members in aircraft. W. R. Osgood. J. Research NBS <u>13</u> , 157 (1934)-----	RP698	OP
Tests of steel tower columns for the George Washington Bridge. A. H. Stang and H. L. Whittemore. J. Research NBS <u>15</u> , 317 (1935)-----	RP831	10¢
Some tests of steel columns incased in con- crete. A. H. Stang, H. L. Whittemore and D. E. Parsons. J. Research NBS <u>16</u> , 265 (1936)-----	RP873	10¢
Tests of eight large H-shaped columns fab- ricated from carbon manganese steel. A. H. Stang, H. L. Whittemore and L. R. Sweetman. J. Research NBS <u>16</u> , 595 (1936)-----	RP896	5¢
Tests of steel chord members for the Bayonne Bridge. A. H. Stang, H. L. Whittemore and L. R. Sweetman. J. Research NBS <u>16</u> , 627 (1936) -----	RP897	5¢
Column strength of tubes elastically re- strained against rotation at the ends. W. R. Osgood. NACA Tech. Reports <u>24</u> (1938)-----	TR615	15¢
The column strength of two extruded aluminum- alloy H-sections. William R. Osgood and Marshall Holt. NACA Tech. Reports <u>25</u> , (1939)-----	TR656	10¢
Compressive Properties - Perforated Cover Plates for Steel Columns, Progress Report No. 1. Am. Inst. of Steel Construction, (New York, N.Y.) 1941.		

## COMPRESSION

(See Columns and Stresses from Strain-Gage Readings and Welding, Gas)

<u>Title</u>	<u>Series</u>	<u>Price</u>
The "pack" method for compressive tests of thin specimens of materials used in thin-wall structures. C.S.Aitchison and L.P.Tuckerman. NACA Tech. Reports <u>25</u> (1939)-----	TR649	10¢

## CUTTING, GAS

Tests on structural details flame-cut from I-beams. Eng. News-Record (New York, N.Y.), 101, 668 (1928).

New series of tests on flame-cut wind connections. O.E.Hovey. Eng. News-Record (New York, N.Y.), 106, 729 (1931).

## ELEVATORS

Load distribution and strength of elevator cable equalizers. A.H.Stang and L.R.Sweetman. J. Research NBS <u>17</u> , 291 (1936)-----	RP912	5¢
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## FATIGUE OF METALS

Design of specimens for short-time fatigue tests. L.B.Tuckerman and C.S.Aitchison. Tech. Pap. BS <u>19</u> , 47 (1924)-----	T275	5¢
Fatigue testing of wing beams by the resonance method. W.M.Bleakney. NACA Tech. Note 660 (1938)-----	TN660	
Discussion of fatigue or progressive failure of metals under repeated stress. L.B.Tuckerman. Proc.Am.Soc.Testing Materials (Philadelphia, Pa.), <u>22</u> , Part II, 266 (1922).		
Tests of ball bearings for rotating beam fatigue machines. L.B.Tuckerman and C.S.Aitchison. Am. Machinist (New York, N. Y.), <u>61</u> , 369 (1924).		

## FLOORS, STEEL

(See Structures and Stresses from Strain-Gage Readings)

## FURNITURE

<u>Title</u>	<u>Series</u>	<u>Price</u>
Program of school equipment research. H. B. Johnson. Proc. Twenty-ninth Annual Meeting, Nat. Assoc. Public School Business Officials (Pittsburgh, Pa.) 111 (1940).		
Specifications in purchasing school furniture. H. B. Johnson. Proc. Thirtieth Annual Meeting, Nat. Assoc. Public School Business Officials (Pittsburgh, Pa.), 224 (1941).		
Purchasing school furniture. H. B. Johnson. Am. School Board J. (Milwaukee, Wis.), 102, 41 (1941).		
Specifications for folding chairs. H.B.Johnson. Am. Council on Education, Washington, D.C., 6, Series VII, No. 1 (1942).		
Specifications for chair desks. H. B. Johnson. Am. Council on Education, Washington, D. C., 6, Series VII, No. 2 (1942).		

## HARDNESS

(See, also, Proving Rings)

Comparison of five methods used to measure hardness. R.P.Devries. (1912)-----	T11	OP
Relationships between Rockwell and Brinell numbers. S.N.Petrenko. BS J.Research 5, 19 (1930). This number of the Journal is available, price 40¢-----	RP185	OP
Determination of the Brinell number of metals. S.N.Petrenko, W.Ramberg and E.Wilson. J. Research NBS 17, 59 (1936)-----	RP903	5¢
Table of Brinell hardness numbers. Misc. Pub., BS, M62 (1924)-----	M62	OP
The hardness testing of metals. Report of Committee of Eng.Div. of Nat.Research Council. Mech. Engineering (New York, N.Y.) 43, 445 (1921).		
Mechanical meaning of hardness numbers. S.N. Petrenko. Mech. Engineering (New York, N.Y.), 46, 926 (1924).		



## HARDNESS (Continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Hardness and hardness testing. L.B.Tuckerman. Mech. Engineering (New York, N. Y.) <u>47</u> , 53 (1925).		
The need for cheaper hardness tests. H.L. Whittemore. Mech. Engineering (New York, N.Y.) <u>47</u> , 223 (1925).		
Discussion of standardizing the Brinell test. H.L.Whittemore, L.B.Tuckerman and S.N. Petrenko. Trans. Am. Soc. Steel Treating (Cleveland, Ohio), <u>XI</u> , 67 (1927).		

HOOKS, GIRDER  
(See Stresses from Strain-Gage Readings)

HOUSES  
(See Structures)

IMPACT  
(See, also, Bolts)

Comparative slow bend and impact notched bar tests of some metals. S.N.Petrenko. Tech. Pap. BS <u>19</u> , 315 (1925)-----	T289	OP
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## LABORATORIES, METALS TESTING

Directory of commercial testing and college research laboratories. Misc.Pub.NBS, M171 (1942)-----	M171	15¢
Testing laboratories equipped for mechanical tests of metals and other engineering materials (1929)-----	LC191	free direct from NBS

## LIMIT, PROPORTIONAL

Discussion of the determination and significance of the proportional limit in testing metals. L.B.Tuckerman. Proc. Am. Soc. Testing Materials. (Philadelphia, Pa.) <u>29</u> , Part II, 538 (1929).		
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MACHINES, TESTING  
(See, also, Calibration of testing  
Machines)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Testing machines for determining the strength and other properties of engineering materials in the laboratories of the National Bureau of Standards (1934)-----	LC405	free direct from NBS
Testing full-sized members to destruction - massive testing machine. The Engineer (London, England) <u>CXLII</u> , 331 (1926). Iron Age (New York, N.Y.) <u>118</u> , 1347 (1926).		
Speed control for screw-power testing machines driven by direct-current motors. A.H.Stang and L.R.Sweetman. Am. Soc. Testing Materials. (Philadelphia, Pa.) Bul. No.87, August 1937.		

MATERIALS  
(See, also, Impact and Proving Rings)

Physical properties of materials (1924). (Circular 101 and Supplement, 45¢). (Supplement only, 5¢)	C101	45¢
Material shortages - redesign and substitution. H.L.Whittemore. Eng.News Record (New York, N.Y.), <u>128</u> , 114 (1942).		
Tensile and Compressive Properties of Some Stainless Steel Sheets. C.S.Aitchison, W.Ramberg, L.B.Tuckerman, and H.L. Whittemore. J.Research NBS <u>28</u> , 499 (1942)--	RP1467	15¢

PIPE  
(See, also, Tubing)

Comparative tests of six-inch cast iron pipe of American and French Manufacture. S.N.Petrenko. Tech.Pap.BS <u>21</u> , 231 (1927)--	T336	OP
Tests of rotary drill pipes. A.H.Stang. Iron Age (New York, N.Y.), <u>108</u> , 804 (1921) and <u>109</u> , 359 (1922).		

## PIPE (Continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
A welded steam pipe. H.L.Whittemore. Industry and Welding (Cleveland, Ohio) <u>2</u> , 2 (1931).		
A welded dredge pipe. H.L.Whittemore. Industry and Welding (Cleveland, Ohio) <u>2</u> ,12 (1931).		

## PLATES

Strength of rectangular flat plates under edge compression. L.Schuman and G.Back. NACA Tech. Reports <u>16</u> (1930)-----	TR356	15¢
Rectangular plate loaded along two adjacent edges by couples in its own plane. W.R. Osgood. J.Research NBS <u>28</u> 159 (1942)-----	RP1450	5¢

PROPELLERS, AIRCRAFT  
(See Vibration)PROVING RINGS  
(See, also, Calibration of Testing Machines)

Specification for proving rings for calibrating testing machines (1941)-----	LC657	free direct from NBS
Elastic ring for verification of Brinell hardness testing machines. S.N.Petrenko. Trans. Am. Soc. Steel Treating (Cleveland, Ohio) <u>IX</u> , 420 (1926).		
Rings for checking accuracy of testing machines. W.S.Morehouse. Iron Age (New York, N.Y.), <u>123</u> , 945 (1929).		
Discussion of therman effects in elastic and plastic deformation. L.B.Tuckerman. Proc. Am. Soc. Testing Materials. (Philadelphia, Pa.) <u>32</u> , Part II, 594 (1932).		
Weighing bridge reactions with proving rings. C.M.Spofford and C.H.Gibbons. Eng. News-Record (New York, N.Y.), <u>114</u> , 446 (1935).		

## RAILS

Final report committee on welded rail joints. Bureau Welding (New York, N.Y.) (1932).		
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## RESEARCH

<u>Title</u>	<u>Series</u>	<u>Price</u>
Research the best way to reduce costs. H. L. Whittemore. Am. Petroleum Inst. Bul. (New York, N.Y.), <u>VIII</u> , 107 (1927).		

## RIVETING

(See, also, Vessels, Pressure)

Mechanical properties of aluminum alloy rivets. C. Brueggeman. NACA Tech. Note 585 (1936)--	TN585	
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Bibliography on riveted joints. Am.Soc.Mech. Engineers (New York, N.Y.) (1924).		
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Investigation of the behavior and of the ultimate strength of riveted joints under load. E.L. Gayhart, Comdr., U.S.N. Trans.Soc.Naval Architects and Marine Engineers, (New York, N.Y.) <u>34</u> , 55 (1926)		
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## ROOFING, COPPER

Seams for copper roofing.. K.H. Beij, BS J. Research <u>5</u> , 535 (1930) -----	RP216	15¢
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## ROPE, WIRE

(See, also, Elevators)

Strength and other properties of wire rope. J.H. Griffith and J.G. Bragg. (1919) -----	T121	OP
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Inspection and tensile tests of some worn wire ropes. W.H. Fulweiler, A.H. Stang, and L.R. Sweetman. J. Research NBS <u>17</u> , 401 (1936) ---	RP920	OP
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Some tests of steel wire rope on sheaves. E. Skillman. Tech. Pap. BS <u>17</u> , 227 (1923) ----	T229	OP
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Discussion of report on guard fence research. H.L. Whittenore. Proc. Eighth Annual Meeting Highway Research Board (National Research Council, Washington, D.C.) 281 (1928).		
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## SEAMS, SOLDERED

(See Roofing, Copper)

## STRAIN GAGES

New electrical telemeter. B. McCollum and O.S. Peters. Tech. Pap. BS <u>17</u> , 737 (1924) -----	T247	OP
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Compensation of strain gages for vibration and impact. W. Bleakney. J. Research NBS <u>18</u> , 723 (1937) -----	RP1005	5¢
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## PIPE (Continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
A welded steam pipe. H.L.Whittemore. Industry and Welding (Cleveland, Ohio) <u>2</u> , 2 (1931).		
A welded dredge pipe. H.L.Whittemore. Industry and Welding (Cleveland, Ohio) <u>2</u> ,12 (1931).		

## PLATES

Strength of rectangular flat plates under edge compression. L.Schuman and G.Back. NACA Tech. Reports <u>16</u> (1930)-----	TR356	15¢
Rectangular plate loaded along two adjacent edges by couples in its own plane. W.R. Osgood. J.Research NBS <u>28</u> 159 (1942)-----	RP1450	5¢

PROPELLERS, AIRCRAFT  
(See Vibration)PROVING RINGS  
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Specification for proving rings for calibrating testing machines (1941)-----	LC657	free direct from NBS
Elastic ring for verification of Brinell hardness testing machines. S.N.Petrenko. Trans. Am. Soc. Steel Treating (Cleveland, Ohio) <u>IX</u> , 420 (1926).		
Rings for checking accuracy of testing machines. W.S.Morehouse. Iron Age (New York, N.Y.), <u>123</u> , 945 (1929).		
Discussion of therman effects in elastic and plastic deformation. L.B.Tuckerman. Proc. Am. Soc. Testing Materials. (Philadelphia, Pa.) <u>32</u> , Part II, 594 (1932).		
Weighing bridge reactions with proving rings. C.M.Spofford and C.H.Gibbons. Eng. News-Record (New York, N.Y.), <u>114</u> , 446 (1935).		

## RAILS

Final report committee on welded rail joints. Bureau Welding (New York, N.Y.) (1932).		
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## RESEARCH

<u>Title</u>	<u>Series</u>	<u>Price</u>
Research the best way to reduce costs. H. L. Whittemore. Am. Petroleum Inst. Bul. (New York, N.Y.), <u>VIII</u> , 107 (1927).		

## RIVETING

(See, also, Vessels, Pressure)

Mechanical properties of aluminum alloy rivets. C. Brueggeman. NACA Tech. Note 585 (1936)--	TN585	
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Bibliography on riveted joints. Am.Soc.Mech. Engineers (New York, N.Y.) (1924).		
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Investigation of the behavior and of the ultimate strength of riveted joints under load. E.L. Gayhart, Comdr.; U.S.N. Trans.Soc.Naval Architects and Marine Engineers, (New York, N.Y.) <u>34</u> , 55 (1926)		
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## ROOFING, COPPER

Seams for copper roofing.. K.H. Beij, BS J. Research <u>5</u> , 585 (1930) -----	RP216	15¢
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## ROPE, WIRE

(See, also, Elevators)

Strength and other properties of wire rope. J.H. Griffith and J.G. Bragg. (1919) -----	T121	OP
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Inspection and tensile tests of some worn wire ropes. W.H. Fulweiler, A.H. Stang, and L.R. Sweetman. J. Research NBS <u>17</u> , 401 (1936) ---	RP920	OP
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Some tests of steel wire rope on sheaves. E. Skillman. Tech. Pap. BS <u>17</u> , 227 (1923) ----	T229	OP
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Discussion of report on guard fence research. H.L. Whittenmore. Proc. Eighth Annual Meeting Highway Research Board (National Research Council, Washington, D.C.) <u>281</u> (1928).		
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## SEAMS, SOLDERED

(See Roofing, Copper)

## STRAIN GAGES

New electrical telemeter. B. McCollum and O.S. Peters. Tech. Pap. BS <u>17</u> , 737 (1924) -----	T247	OP
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Compensation of strain gages for vibration and impact. W. Bleakney. J. Research NBS <u>18</u> , 723 (1937) -----	RP1005	5¢
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## STRAIN GAGES (Continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Optical strain gages and extensometers. L.B. Tuckerman. Proc. Am. Soc. Testing Materials (Philadelphia, Pa.) <u>23</u> , Part II, 602 (1923).		
New developments in electrical telemeters. O.S. Peters and R.S. Johnston. Proc. Am. Soc. Testing Materials (Philadelphia, Pa.), <u>23</u> , Part II, 592 (1923).		
Whittemore strain gage. H.L. Whittemore. Instruments (Pittsburgh, Pa.) <u>I</u> , 299 (1928).		

## STRAIN LINES IN STEEL

Strain lines, structural members. Delaware Bridge. Misc. Pub. BS <u>M72</u> (1926) -----	M72	OP
Strain detection in mild steel by wash coating. R.S. Johnston, British Iron and Steel Inst. (London, England) <u>CXII</u> , 342 (1925).		

## STRESSES FROM STRAIN-GAGE READINGS

Physical tests of motor truck wheels. C.P. Hoffman. (1920) -----	T150	OP
Load strain-gage test of 150-ton floating crane for the Bureau of Yards and Docks, U.S. Navy Department. L.J. Larson and R.L. Templin. (1920). -----	T151	OP
Tests of some girder hooks. H.L. Whittemore and A.H. Stang. Tech. Pap. BS <u>13</u> , 305 (1924) ---	T260	10¢
Compressive tests of bases for subway columns. J.H. Edwards, H.L. Whittemore and A.H. Stang. BS. J. Research <u>5</u> , 619 (1930). J. Am. Welding Soc. (New York, N.Y.) <u>10</u> , 20, (1931) -----	RP218	10¢
Stress distribution in welded steel pedestals. J. H. Edwards, H.L. Whittemore and A.H. Stang. BS J. Research <u>5</u> , 303 (1930). J. Am. Welding Soc. (New York, N.Y.) <u>10</u> , 46, (1931) -----	RP232	10¢
Strain measurement in the reinforcement for the dome of the Natural History Building. W.C. Lyons, H.L. Whittemore, A.H. Stang, and L.R. Sweetman, BS J. Research <u>6</u> , 183 (1931) -----	RP268	15¢

## STRESSES FROM STRAIN-GAGE READINGS (continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Compressive tests of jointed H-section steel columns. J.K. Edwards, F.L. Whittimore and A.H. Stang. BS J. Research <u>6</u> , 305 (1931) -----	RP277	15¢
Tests of cellular sheet steel flooring. H.L. Whittimore and J.M. Frankland. BS J. Research <u>9</u> , 131 (1932). J. Am. Welding Soc. <u>12</u> , 4 (1933) -----	RP463	10¢
Determination of stresses from strains on three intersecting gage lines and its application to actual tests. W.R. Osgood and R.G. Sturm. BS J. Research <u>10</u> , 685 (1933) -----	RP559	5¢
Test of a flat steel plate floor under load. L.B. Tuckerman, A.H. Stang and W.R. Osgood. BS J. Research <u>12</u> , 362 (1934) --	RP662	0P
Determination of principal stresses from strains on four intersecting gage lines 45° apart. W.R. Osgood. J. Research NBS <u>15</u> , 579 (1935) -----	RP351	5¢
Tests of eight large H-shaped columns fabricated from carbon-manganese steel. A.H. Stang, H.L. Whittimore and L.R. Sweetman. J. Research NBS <u>16</u> , 595 (1936) --	RP396	5¢
Graphical computations of stresses from strain data. A.H. Stang and M. Greenspan. J. Research NBS <u>19</u> , 437 (1937) --	RP1034	10¢
Strength of a riveted steel rigid frame having straight flanges. A.H. Stang, M. Greenspan and W.R. Osgood. J. Research NBS <u>21</u> , 269 (1938) -----	RP1130	15¢
Strength of a riveted steel rigid frame having a curved inner flange. A. H. Stang, M. Greenspan and W.R. Osgood. J. Research NBS <u>21</u> , 853 (1938) -----	RP1161	10¢
Heterostatic loading and critical astatic loads. L.B. Tuckerman. J. Research NBS <u>22</u> , 1 (1939) -----	RP1163	10¢
Strength of a welded steel rigid frame. A.H. Stang and M. Greenspan. J. Research NBS <u>23</u> , 145 (1939) -----	RP1224	5¢



## STRESSES FROM STRAIN-GAGE READINGS (continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Approximation to a function of one variable from a set of its mean values. H. Greenspan. J. Research NBS <u>23</u> , 309 (1939) -----	RP1235	5¢
Experimental study of deformation and effective width in axially loaded sheet-stringer panels. W. Ramberg, A.E. McPherson and S. Levy. NACA Tech. Note 334 (1939) -----	TN634	
Compressive test of a monocoque box. W. Ramberg, A.E. McPherson and S. Levy. NACA Tech. Note 721 (1939) -----	TN721	
Laboratory strength tests of motor truck wheels. T.W. Greene, J. Soc. Automotive Engineers (New York, N.Y.), <u>XV</u> , 150 (1924).		
Compressive properties, perforated cover plates for steel columns. Progress Report No. 1. Am. Inst. Steel Construction (New York, N.Y.) (1941).		

## STRUCTURES

(See, also, Stresses from strain-gage readings, Strain lines in steel, and Welding, electric, gas, and general)

The BMS reports on the structural properties of house constructions are listed in LC552. This letter circular can be obtained free on request from the National Bureau of Standards.

Test of arc-welded plate girder by American Bridge Company and the U.S. Bureau of Standards. H.L. Whittemore. J. Am. Welding Soc. (New York, N.Y.), 6, 42 (1927).

Spot-welded girders and columns tested for strength. L.B. Tuckerman, Eng. News-Record (New York, N.Y.), 22, 932 (1924).

Discussion of wind bracing connection efficiency. W.R. Osgood, Proc. Am. Soc. Civil Engineers (New York, N.Y.), 53, 675 (1932).

Discussion of stresses in space structures. W.R. Osgood. Proc. Am. Soc. Civil Engineers (New York, N.Y.), 60, 1035 (1934).

## STRUCTURES (continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Tests of Mesnager hinges. D.E. Parsons and A.H. Stang. J. Am. Concrete Inst. (Detroit, Mich.) <u>6</u> , 304 (1935). Proc. <u>31</u> .		
Stresses in a rectangular knee of a rigid frame. W.R. Osgood. J. Research NBS <u>27</u> 443 (1941) -----	RP1431	5¢
Research on building materials and structures for use in low-cost housing. H.L. Dryden (1938) -----	BMS1	10¢
Methods of determining the structural properties of low-cost house constructions. H.L. Whittemore and A.H. Stang (1938) -	BMS2	10¢
Structural properties of six masonry wall constructions. H.L. Whittemore, A.H. Stang and D.E. Parsons (1938) -----	BMS5	15¢
Structural properties of the Insulated Steel Construction Company's "Frameless-Steel" constructions for walls, partitions, floors, and roofs. H.L. Whittemore, A.H. Stang, and V.B. Phelan (1933)	BMS9	10¢
Structural properties of one of the "Keystone Beam Steel Floor" constructions sponsored by the H.H. Robertson Company. H.L. Whittemore, A.H. Stang, and C.C. Fishburn (1938) -----	BMS10	10¢
Structural properties of the Curren Fabrihome Corporations "Fabrihome" constructions for walls and partitions. H.L. Whittemore, A.H. Stang, and V.B. Phelan (1938) -----	BMS11	10¢
Structural properties of "Steelox" constructions for walls, partitions, floors, and roofs sponsored by Steel Buildings, Inc. H.L. Whittemore, A.H. Stang and V.B. Phelan (1939) -----	BMS12	15¢
Structural properties of "Wheeling Long-Span Steel Floor" construction sponsored by the Wheeling Corrugating Company. H.L. Whittemore, A.H. Stang, and V.B. Phelan (1939) -----	BMS15	10¢

## STRUCTURES (continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Structural properties of a "Tilecrete" floor construction sponsored by Tilecrete Floors, Inc. H.L. Whittemore, A.H. Stang, and C.C. Fishburn (1939) -----	BMS16	10¢
Structural properties of "Pre-Fab" constructions for walls, partitions, and floors sponsored by the Harnischfeger Corporation. H.L. Whittemore, A.H. Stang and V.B. Phelan (1939) -----	BMS18	10¢
Structural properties of "Twachtman" constructions for walls and floors sponsored by Connecticut Pre-cast Buildings Corporation. H.L. Whittemore, A.H. Stang, and D.E. Parsons (1939) -----	BMS20	10¢
Structural properties of a concrete-block cavity-wall construction sponsored by the National Concrete Masonry Assoc. H.L. Whittemore, A.H. Stang and D.E. Parsons. (1939) -----	BMS21	10¢
Structural properties of "Dun-Ti-Stone" wall construction sponsored by the W.E. Dunn Manufacturing Company. H.L. Whittemore, A.H. Stang and D.E. Parsons (1939) -----	BMS22	10¢
Structural properties of a brick cavity-wall construction sponsored by the Brick Manufacturers Assoc. of New York, Inc. H.L. Whittemore, A.H. Stang, and D.E. Parsons (1939) -----	BMS23	10¢
Structural properties of a reinforced-brick wall construction and a brick-tile cavity-wall construction sponsored by the Structural Clay Products Institute. H.L. Whittemore, A.H. Stang, and C.C. Fishburn. (1939) ----	BMS24	10¢
Structural properties of conventional wood-frame constructions for walls, partitions, floors, and roofs. G.E. Hock (1939) -----	BMS25	15¢
Structural properties of "Nelson Pre-cast Concrete Foundation" wall construction sponsored by the Nelson Cement Stone Company, Inc. H.L. Whittemore, A.H. Stang and C.C. Fishburn (1939) -----	BMS26	10¢

## STRUCTURES (continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Structural properties of "Bender Steel Home" wall construction sponsored by the Bender Body Company. H. L. Whittemore, A.H. Stang, and V.B. Phelan (1939) -----	BMS27	10¢
Structural properties of a wood-frame wall construction sponsored by the Douglass Fir Plywood Assoc. H.L. Whittemore and A.H. Stang with the collaboration of T.R.C. Wilson, Forest Products Laboratory, (1939) -----	BMS30	10¢
Structural properties of "Insulite" wall and "Insulite" partition constructions sponsored by the Insulite Co. H.L. Whittemore and A.H. Stang with the collaboration of T.R.C. Wilson, Forest Products Laboratory (1939) -----	BMS31	15¢
Structural properties of two brick-concrete-block wall constructions and a concrete-block wall construction sponsored by the National Concrete Masonry Assoc. H.L. Whittemore, A.H. Stang and D.E. Parsons (1939) -----	BMS32	10¢
Structural properties of wood-frame wall, partition, floor, and roof constructions with "Red Stripe" lath sponsored by the Weston Paper and Manufacturing Co. H.L. Whittemore and A.H. Stang with the collaboration of T.R.C. Wilson, Forest Products Laboratory (1940) -----	BMS36	10¢
Structural properties of "Palisade Homes" constructions for walls, partitions, and floors, sponsored by Palisade Homes. H.L. Whittemore and A.H. Stang with the collaboration of T.R.C. Wilson, Forest Products Laboratory (1940) -----	BMS37	10¢
Structural properties of two "Dunstone" wall constructions sponsored by the W.E. Dunn Manufacturing Co. H.L. Whittemore, A.H. Stang and D.E. Parsons (1940) -----	BMS38	10¢
Structural properties of a wall construction of "Pfeifer Units" sponsored by the Wisconsin Units Co. H.L. Whittemore, A.H. Stang, and D.E. Parsons (1940) -----	BMS39	10¢



## STRUCTURES (Continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Structural properties of a wall construction of "Knap Concrete Wall Units" sponsored by Knap America, Inc. H.L. Whittimore, A.H. Stang, and C.C. Fishburn (1940) -----	BMS40	10¢
Structural properties of wood-frame wall and partition constructions with "Celotex" insulating boards sponsored by the Celotex Corporation. H.L. Whittimore and A.H. Stang with the collaboration of T.R.C. Wilson, Forest Products Laboratory. (1940)	BMS42	15¢
Structural properties of "Scot-Bilt" prefabricated sheet-steel constructions for walls, floors, and roofs sponsored by the Globe-Wernicke Co. H.L. Whittimore, A.H. Stang and V.B. Phelan. (1940) -----	BMS46	10¢
Structural properties of prefabricated wood-frame constructions for walls, partitions, and floors sponsored by American Houses, Inc. H.L. Whittimore, and A.H. Stang with the collaboration of T.R.C. Wilson, Forest Products Laboratory. (1940) -----	BMS47	10¢
Structural properties of "Precision-Built" frame wall and partition constructions sponsored by the Homasote Co. H.L. Whittimore and A.H. Stang with the collaboration of G.E. Heck, Forest Products Laboratory. (1940)	BMS48	10¢
Structural properties of "Tilecrete Type A" floor construction, sponsored by the Tilecrete Co. H.L. Whittimore, A.H. Stang, and D.E. Parsons. (1940) -----	BMS51	10¢
Structural properties of a masonry wall construction of "Munlock Dry Wall Brick, sponsored by the Munlock Engineering Co. H.L. Whittimore, A.H. Stang and D.E. Parsons (1940) -----	BMS53	10¢
Structural properties of two nonreinforced monolithic concrete wall constructions. H.L. Whittimore, A.H. Stang and D.E. Parsons. (1940) -----	BMS61	10¢
Structural properties of a precast joist concrete floor construction, sponsored by the Portland Cement Assoc. H.L. Whittimore, A.H. Stang and D.E. Parsons. (1940) -----	BMS62	10¢

## STRUCTURES (Continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Structural properties of "Mu-Steel" prefabricated sheet-steel constructions for walls, partitions, floors, and roofs, sponsored by Herman A. Mugler. H.L. Whittemore, A.H. Stang and V.B. Phelan. (1941) -----	BMS67	15¢
Structural properties of "Precision-Built, Jr." prefabricated wood frame wall construction, sponsored by the Homasote Co. A.H. Easton and M.F. Peck with the collaboration of R.F. Luxford, Forest Products Laboratory. -----	BMS72	10¢
Structural and heat-transfer properties of "U.S.S. Panelbilt" prefabricated sheet-steel constructions for walls, partitions, and roofs, sponsored by the Tennessee Coal, Iron & Railroad Co. H.L. Whittemore, A.H. Stang, V.B. Phelan and R.S. Dill (1941) -----	BMS74	15¢
Structural, heat-transfer, and water-permeability properties of five earth-wall constructions. H.L. Whittemore, A.H. Stang, E. Hubbell and R.S. Dill. (1941) -----	BMS78	20¢

STRUTS  
(See Columns)

TANKS  
(See Vessels, Pressure)

## TESTING, GENERAL

The significance of tests. W.E. Enley and L.B. Tuckerman. Am. Soc. Testing Materials (Philadelphia, Pa.) Bul. No. 99, August 1939.

THREADS, SCREW  
(See Bolts)

TORSION  
(See Beams, Tubing)

## TUBING

(See, also, Columns, Pipe)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Physical properties of electrically welded steel tubing. H.L. Whittemore, J.S. Adelson, and E.O. Seaquist. BS J. Research <u>4</u> , 475 (1930). J. Am. Welding Soc. (New York, N.Y.), <u>2</u> , 17 (1930) -----	RP161	0P
Torsion tests of tubes. A.H. Stang, W. Ramberg and G. Back. NACA Tech. Reports <u>23</u> , (1937)	TR601	10¢
The crinkling strength and the bending strength of round aircraft tubing. W.R. Osgood. NACA Tech. Reports <u>24</u> , (1938) -----	TR632	10¢

## VESSELS, PRESSURE

Stresses in a few welded and riveted tanks tested under hydrostatic pressure. A.H. Stang and T.W. Greene. Tech. Pap. BS <u>17</u> , 645 (1923)	T243	10¢
Welded pressure vessels. Bul. No. 5 Am. Bureau Welding (New York, N.Y.). J. Am. Welding Soc. (New York, N.Y.), <u>2</u> , 11 (1923)		
Proper construction of welds for pressure vessels. H.L. Whittemore. Eng. News-Record (New York, N.Y.), <u>92</u> , 462 (1924).		
How to investigate welded tanks. H.L. Whittemore. J. Am. Welding Soc. (New York, N.Y.), <u>2</u> , 23 (1926).		

## VIBRATION

Method for determining stresses in non-rotating propeller blade vibrating with natural frequency. W. Ramberg, P.S. Ballif and M.J. West. J. Research NBS <u>14</u> , 139 (1935)	RP764	5¢
Calculation of stresses and natural frequencies for a rotating propeller blade vibrating flexurally. W. Ramberg and S. Levy. J. Research NBS <u>21</u> , 639 (1938) -----	RP1148	10¢

## VISES, MACHINISTS'

<u>Title</u>	<u>Series</u>	<u>Price</u>
Efficiency of machinists' vises. H.L. Whittemore and L.R. Sweetman. BS J. Research <u>3</u> , 191 (1929) -----	RP91	OP

WELDING, ELECTRIC  
(See Pipe and Structures)

WELDING, GAS

Investigation of oxyacetylene welding and cutting blowpipes, with special reference to their design, safety, and economy in operation. R.S. Johnston. (1922) -----	T200	OP
Strength of welded joints in tubular members for aircraft. H.L. Whittemore and W.C. Brueggeman. NACA Tech. Reports <u>16</u> , (1930). J. Am. Welding Soc. (New York, N.Y.), <u>9</u> , 107 (1930) -----	TR348	30¢
Strength of welded aircraft joints. W.C. Brueggeman. NACA Tech. Reports <u>23</u> , (1937)	TR584	15¢
Investigation of oxyacetylene welding and cutting blowpipes. R.S. Johnston. Mech. Engineering (New York, N.Y.) <u>43</u> , 305 (1921). Trans. Am. Soc. Mech. Engineers (New York, N.Y.), <u>43</u> , 141 (1921).		
Testing gas welds. H.L. Whittemore. Welding Engineer (Chicago, Ill.), <u>12</u> , 38 (1927) Am. Machinist (New York, N.Y.), <u>66</u> , 40 (1927). Power (New York, N.Y.), <u>62</u> , 211-1927. Acetylene J. (Chicago, Ill.), <u>28</u> , 330 (1927). Welding J. (London, England), <u>XXIV</u> , 46 and 156 (1927).		

WELDING, GENERAL

(See, also, Pipe, Rails, Stresses from Strain-gage Readings, and Vessels, Pressure)

Strength of welded shelf angle connections. J.H. Edwards, H.L. Whittemore and A.H. Stang. BS J. Research <u>5</u> , 731 (1930). J. Am. Welding Soc. (New York, N.Y.), <u>10</u> , 29 (1931) -----	RP230	10¢
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## WELDING, GENERAL (Continued)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Control for welding. H.L. Whittemore. J. Am. Welding Soc. (New York, N.Y.) <u>VII</u> , 52 (1928)		
Procedure control for aircraft welding. H.L. Whittemore, J.J. Crowe and H.H. Moss. Proc. Am. Soc. Testing Materials (Philadelphia, Pa.), <u>30</u> , Part II, 140 (1930). Welding (Pittsburgh, Pa.). <u>1</u> , 539 (1930).		
Inspection service for welded structures seen as need. H.L. Whittemore. Steel (Cleveland, Ohio), <u>38</u> , 44 (1931). Welding Engineer (Chicago, Ill.), <u>16</u> , 49(1931)		
Report of structural steel welding committee, Am. Bureau Welding (New York, N.Y.) (1931).		
Welding research. H. L. Whittemore. Industry and Welding (Cleveland, Ohio), <u>2</u> , 7 (1931).		
Welding longitudinal seams of shell plating. L.C. Bibber. Trans. Soc. Naval Architects and Marine Engineers <u>40</u> , 140 (1932).		
These consulting engineers. H.L. Whittemore. Industry and Welding (Cleveland, Ohio), <u>4</u> , 17 (1932).		
Safe welding practice. H.L. Whittemore. Eng. News-Record (New York, N.Y.), <u>112</u> , 237 (1934).		

## WHEELS, TRUCK

(See Stresses from Strain-Gage Readings)

