Inventory of the Harold W. Iversen Collection, 1930-1970

Collection number: MS 76/13

The Water Resources Center Archives

University of California, Berkeley
Berkeley, California

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Descriptive Summary

Title: Harold W. Iversen Collection,
Date (inclusive): 1930-1970
Collection number: MS 76/13
Creator: Iversen, Harold Walter, 1913-1973
Extent: ca. 15 linear ft. (14 cartons, ca. 1,300 items)
Repository: Water Resources Center Archives (Calif.)
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Language: English

Access

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Preferred Citation

[Identification of item], Harold W. Iversen Collection, MS 76/13, The Water Resources Center Archives, University of California, Berkeley.

Scope and Content

Collection of reports and papers on the subjects of pumps, turbines, fans, metering and flow (hydraulics).

Access Points

Hydraulics

Flow meters

Hydraulic measurements

Turbines

Hydraulic turbines

Water hammer

Hydrodynamics

Fluid mechanics

Fluid dynamics

Biography

Harold Walter Iversen
1913-1973
Professor of Mechanical Engineering

Harold Walter Iversen died on November 10, 1973 at the age of sixty, after a long and valiant struggle to overcome the effects of major cancer surgery. He is survived by his wife, Ruby Kahler Iversen, and two children, his son Jon and his daughter Karen Iversen Timm, both of Dixon, California.

Harold Iversen was born in San Francisco on September 1, 1913, the son of foreign-born parents-Carl Alfred Iversen, a native of Norway, and Martha Jorgensen Iversen, who came from Denmark. His parents moved to San Pedro, where his father, a former ship captain, found employment as Port Captain and Dock Superintendent. Harold spent his early years in San Pedro, where he acquired a familiarity with ships and with people who work in shipping which later proved important to him.

After completing his secondary education in the public schools of San Pedro, Harold studied at UCLA for two years, completing the pre-engineering program and qualifying for transfer to the Berkeley campus, which at that time had the only Engineering College in the University system. Before enrolling at Berkeley, he spent two years earning the money to finance his education. Most of the jobs related to the sea, ranging from bathhouse attendant to wiper and oiler in the engine rooms of tanker ships, the latter activity keeping him at sea for nearly a year.

Following receipt of the B.S. degree in Engineering after two years at Berkeley, Harold worked as a Mechanical Engineer for the Ingersoll-Rand Corporation in New Jersey, where his work involved the development and testing of compressors, blowers, pumps, and allied equipment. During the four-year period at this work, he rose from engineering trainee to responsible charge of the test work in the laboratory. This practical engineering experience contributed to his ability to later teach engineering subjects from a practical viewpoint.

Harold returned to the Berkeley campus in 1941 to teach in the general field of fluid mechanics and to qualify for the M.S. degree, which was awarded to him in 1943. He served in several academic ranks and was advanced to Professor of Mechanical Engineering in 1957. While he taught a variety of different courses in the laboratory and lecture room, his major interest was in the field of pumping machinery. The course in this subject, taught for a number of years, was a developing course, keeping pace with his research in the field. At the time of his death Harold was engaged in the compilation of his research and course notes into a textbook on pumping machinery.

Harold was in local charge of the engineering group sent to Bikini Atoll to measure the wave disturbance produced by the early atom bomb tests conducted there. He developed the recording instruments required for these observations and was able to improvise on the spot, as indicated by his use of empty tomato cans lashed to palm trees at various heights to determine the maximum heights of the wave crossing the atoll.

As a professional engineer, Harold was called upon to serve as a consultant on fluid mechanics problems, one of these being the problem of designing a dredge pump for use in Ghana, at a site where the sand contained diamond particles capable of eroding the runners of pumps quite rapidly. His design of a jet pump solved the problem, with laboratory models to support his conclusions. This preoccupation with models was also evidenced by his success in solving problems for the City of San Francisco, where the pump intakes in the waste treatment plants could not carry the load until revamped, following model tests carried on by Professor Iversen. He also used models to finalize the hydraulic design of the fountain at the Bank of America in San Francisco, a design which has been copied for other fountains.

Professor Iversen served as Associate Dean of the College of Engineering from 1964 to 1969. Here he worked with students and faculty members to improve the advising system of the College and to aid students in finding solutions to their problems of academic standing. He served as advisor to student organizations and exercised his hobby of cooking by serving as barbecue chef at the annual ASME student picnic.

Harold will be remembered by his colleagues and former students for his careful and time-consuming preparation for class presentations, his clear and concise reporting of research and design work, and his insistence upon the best performance of which the students were capable.

E. D. Howe
J. W. Johnson
P. B. Stewart

Introduction

Dean M. P. O'Brien, upon his arrival in Berkeley in the late 1920's, started a collection of reprints, pamphlets, etc. on various areas of hydraulics-principally in the fields of interest to civil and mechanical engineers. The base of this collection appears to be the personal collection of Blake van Leer, Professor of Mechanical Engineering at the University, who later was to serve with distinction as President of the Georgia Institute of Technology. The collection of O'Brien was in his office in the Mechanics Building and additions were made continually over the years by Professors E. D. Howe, R. G. Folsom, H. A. Einstein, J. W. Johnson, and H. W. Iversen.

By 1958, when Einstein and Johnson were transferred from the Department of Mechanical Engineering to the Department of Civil Engineering, most of the collection was taken to the then new O'Brien Hall-with the exception of the material on pumps, turbines, etc. which was of interest principally to mechanical engineers. This material was left with Professor Iversen, who systematically cataloged the collection into subject listings. Upon Iversen's death, the collection was transferred to the Water Resources Center Archives where it is now known as the Iversen Collection.

The main collection in O'Brien Hall was assembled over the years into two collections by Professor Einstein-one collection pertained to Sediment, with twenty-six subject categories, and the other to Flow, with twenty-four subject categories. These two collections were transferred to the Water Resources Center Archives upon the death of Professor Einstein, and are now known as the Einstein Collection.

Other parts of the original O'Brien Collection have been integrated into the regular collection of the Water Resources Center Archives or into the Ocean Engineering Collection which is also in the Archives.

J. W. Johnson
June 6, 1977

DISK FRICTION PUMPS

Box Box 1, Folder 1.1 **"Screw viscosity pumps", *Engineering,* Nov.17, 1922, pp.606-607; Aug.31, 1928, pp.249-250; Sept.28, 1928, pp.385-387**

Folder 1.2 **Correspondence from Westco Pump Sales Co. re multi-stage pumps, 1951. [Also miscellaneous catalogs and blueprints on Westco pumps.]**

Folder 1.3 ***Summary of single stage tests (turbulence pump)*, by C.C. Ross, March 1947, 4 1. (typescript). [Re U.C. pump development, Navy trim pumps.]**

Folder 1.4 ***Report on partial completion of tests on Burkes Pump with application to ultra-rough surfaces* [includes curves], by William Everett, April 1935,**

Physical Description: 49 1. (handwritten).

Folder 1.5 ***Pumpen kleiner Leistung*, by F.R. Lorenz, in *Zeitschrift des Vereines deutscher Ingenieure,* Band 78, Nr.9, März 1934 (pp.287-291). [Also English translation.] - Translation of *Part C: Water-ring pumps with common discharge for air and pumped-water. Bucket work is positive, both for air and water output*, by C. Pfleiderer, in *Die Kreiselpumpen,* 2nd add. (pp.443-447) - "Wee-Mac Self-Priming Pump," *Mechanical Engineering,* May 1933 (pp.315). [Also miscellaneous correspondence and literature re pumps.]**

Folder 1.6 ***Disc pump tests, ring leakage and single stage tests*, by A.C. Marshall, March 1943**

Physical Description: 1 v. (handwritten).

Folder 1.7 ***Single stage test unit*, by Wilcox Haggard, April 1943,**

Physical Description: 1 v. (handwritten).

Folder 1.8 ***Data sheet and curves on Westco ratios*, by R.G. Folsom, March 1943,**

Physical Description: 2 1. (handwritten).

Folder 1.9 ***Tests of oil-film journal bearings for railroad cars*, by S.J. Needs, in *Transactions of the A.S.M.E.,* May 1946, pp.337-353.**

Folder 1.10 ***Heat effects in lubricating films*, by A.C. Hagg, in *Journal of Applied Mechanics,* June 1944, pp.A-72-A-76.**

Folder 1.11 ***Power losses in high-speed journal bearings*, by F.C. Linn and D.E. Irons, in *Transactions of the A.S.M.E.,* Oct.1941, pp.617-629.**

Folder 1.12 **"The nature of the lubrication process", *Lubrication,* Vol.28, No.1, Jan.1942, The Texas Company,**

Physical Description: 12 p.

a) *Shallow well automatic water systems*, Berkeley Pump Corporation, June 4, 1940, pp.9-12, (Bulletin no.560).
b) *Positive self-priming Model SP400 Brady-Penrod Centrifugal Coolant Pump*, Brady-Penrod, Inc., Muncie, Ind. [Price list.]
c) "Pump market quotations", *Peerless News Bulletin,* Vol.IX, No.4, March 15, 1945, Peerless Pump Division of Food Machinery Corporation.
d) *SureVac low-speed, self-priming centrifugal pumps*, Dorward Pump Co., San Francisco, 6 p. (Bulletin no.501).
e) [Blueprint graph re maximum efficiency vs. specific speed for commercial turbulence pumps] U.C. Hydraulic Laboratory, HYD-199.
f) [Pump, invented by Francis E. Brady, Jr., U.S. Patent Office, patented July 4, 1939, Patent no.2,164,869.]

Physical Description: 5 p.

g) [Rotary pump, invented by Adolf Bargeboer, U.S. Patent Office, patented Sept.7, 1937, Patent no.2,092,740.]

Physical Description: 2 p.

h) [Data taken from *Experimental investigation of fruition losses in wrought iron pipe when installed with couplings*, by L.H. Kessler, Univ. of Wisconsin, Engineering Experiment Station, Series no.82, 1935.]
i) *New turbine type pump*, Roy E. Roth Co., Rock Island, Ill. [Magazine clipping.]

Folder 1.13 ***Combined hydrostatic and hydrodynamic principles applied to non-contacting face seals*, by James F. Gardner (presented at the Fourth International Conference on Fluid Sealing held in conjunction with the 24th ASLE annual meeting in Philadelphia, May 5-9, 1969), American Society of Lubrication Engineers, Park Ridge, Ill., pp.84-93 (FICFS Preprint no.36).**

Folder 1.14 ***Development of a liquid dynamic seal to vacuum*, by E. Schnetzer and R.J. Rossbach (presented at the Fourth International Conference on Fluid Sealing held in conjunction with the 24th ASLE annual meeting in Philadelphia, May 5-9, 1969), American Society of Lubrication Engineers, Park Ridge, Ill., pp.253-262 (FICFS Preprint no.40).**

Folder 1.15 ***Numerical solutions for the flow and pressure fields in an idealized spiral grooved pumping seal*, by John Zuk and Harold E. Renkel (presented at the Fourth International Conference on Fluid Sealing held in conjunction with the 24th ASLE annual meeting in Philadelphia, May 5-9, 1969), American Society of Lubrication Engineers, Park Ridge, Ill., pp.209-220 (FICFS Preprint no.30).**

Folder 1.16 ***The development of a three-stage screw-type labyrinth seal*, by A.I. Golubiev (presented at the Fourth International Conference on Fluid Sealing held in conjunction with the 24th ASLE annual meeting in Philadelphia, May 5-9, 1969), American Society of Lubrication Engineers, Park Ridge, Ill., pp.1-3 (FICFS Preprint no.35).**

Folder 2.1 ***Calculation of leakage from pressure measurements*, by Wm. R. Walden, April 29, 1938,**

Physical Description: 1 folder (handwritten).

Folder 2.2 **a) [Figure 9, showing assembly of Norma-Hoffmann vertical wall-bearing spindle mountings for woodworking machinery; Figure 10, showing New Departure designs for oil and grease lubricated spindle bearings], in *Lubrication,* July 1941, pp.81-82.**
b) [Figures 11 and 12, showing spindle of a Norton grinder], in *Lubrication,* May 1942, p.12.
c) "Lubrication in low temperature refrigeration", *Lubrication,* Vol.XXXI, No.12, Dec.1945, pp.127-130.
d) *Memorandum on equations for lubrication, for the ease of infinitely wide plane bearings*, [notes for Chap.I, ME 127, University of California, Department of Mechanical Engineering]

Physical Description: 2 p.

Folder 2.3 ***Pumping machinery notes*, by R.G. Folsom**

Physical Description: [7 l., handwritten].

Folder 2.4 **[Characteristic curves of Type V turbine pumps, blueprint graphs], Simonds Machinery Co., San Francisco, Oct. 12, 1937.**

Folder 2.5 **a) *Tests of leakage loss in disc friction pumps* Byron Jackson Company, Berkeley, Calif., Sept. 3, 1936**

Physical Description: [2 l., typescript].

b) *Disk friction pumps - Westco outline*, July 26, 1926

Physical Description: [4 l., handwritten].

Folder 2.6 **[Notes for ME 127, Chap. I, Pumping machinery problems and solutions, University of California, Department of Mechanical Engineering, Fluid Mechanics Laboratory.]**

Folder 2.7 **a) *Experimental investigations on the problem of roughness*, by H. Schlichting (Verlag von Julius Springer, Berlin, Band VII, Heft 1, Feb. 1936), translated by Josef Staufer, University of California, Department of Mechanical Engineering, Sept. 10, 1936,**

Physical Description: 48 l. (typescript).

Scope and Content Note

(Works Progress Administration Project no. 58, Translation no. 168).

b) [Review of *A new method for measurement of frictional resistance of rough walls*, by H. Schlichting, *Zent. für Mech.,* 4 Band, Heft 5, Sept. 1936]

Physical Description: 2 1. (handwritten).

Folder 2.8 **"Summary of discussion with Dr. Samaras and Mr. Bierlein of Wright-Patterson Field, July 25, 1950," by H.W. Iversen [4 1., handwritten]. [Also correspondence, notes, photo re turbulence pump, Ohio State University.]**

Folder 2.9 **a) [Letter from A. Hollander, Byron Jackson Co., Los Angeles, to M.P. O'Brien, U.C. Berkeley, re patent situation on friction pumps, dated Feb. 2, 1937.]**

b) [Notes for ME 127 on *Energy loss in laminar sublayer*, Sept. 12, 1937,]

Physical Description: 2 1., handwritten.

c) *Burks shallow and deep well water systems*, Decatur Pump Company, Decatur, Ill., 1938, 16 p. (Bulletin no. 40-60).

Folder 2.10 ***Dimensions, capacities and typical mountings of self-aligning equalizing types of Kingsbury thrust bearings; horizontal and vertical* , Kingsbury Machine Works, Inc., Philadelphia, Pa., 1931, 39 p. (Bulletin HV).**

Folder 2.11 ***Horizontal mountings; Kingsbury thrust bearings and journal bearings, small to medium sizes*, Kingsbury Machine Works, Inc., Philadelphia, Pa., 1932, 35 p. (Bulletin S).**

Folder 2.12 ***The new 1000 h.p. Wright Cyclone*, Wright Aeronautical Corporation, Paterson, N.J. [1936,].**

Physical Description: 1 v., unpaged

Folder 2.13 **Miscellaneous pamphlets:**

a) *Roots-Connersville Regenerative Turbine Pumps*, Roots-Connersville Blower Corp., Connersville, Ind., (Bulletin 260-B11B).

b) *Burks pumps*, Decatur Pump Company, Decatur, Ill., 1934, 30 p. (Catalog no. 34).

c) *Burks self priming turbine condensation return units*, Decatur Pump Co., Decatur, Ill., [1938], 8 p. (Bulletin no. 104C).

d) *G200 Series Wright Cyclone*, Wright Aeronautical Corporation, Paterson, N.J.

e) *Burks self priming super turbine pumps and water systems,* Decatur Pump Company, Decatur, Ill, [1937], 43 p. (General catalog no. 40).

f) *SureVac low speed, self priming centrifugal pumps*, Dorward Pump Co., San Francisco, 6 p. (Bulletin no. 501).

g) *Regenerative RCS turbine pumps; some outstanding advantages*, Roots-Connersville-Wilbraham, Connersville, Ind., 1935, [11 p.] (Bulletin no. 260-B11).

h) *Worthington balanced monobloc regenerative turbine pumps*, Worthington Pump and Machinery Corporation, Harrison, N.J., 7 p. (Bulletin W-324-B3).

i) [Westco pumps], Westco Pump Corporation, Davenport, Iowa, 1936, 8 p. (Form 701).

Folder 2.14 **"Portable air compressor", *Engineering,* Sept. 27, 1946, p. 309.**

Folder 2.15 ***On dimensional analysis and the presentation of data in fluid-flow problems*, by E.R. Van Driest, in *Journal of Applied Mechanics,* March 1946, p. A-34-A-40.**

Folder 2.16 ***Applied mechanics,* Proceedings 1949, Vol. 161, The Institution of Mechanical Engineers, 1 v. (W.E.P. no. 48). Contents: *The full journal bearing*, by A. Cameron and W.L. Wood, pp.59-72; *The surface-roughness of bearing-surfaces and its relation to oil film thickness at breakdown*, by A. Cameron, pp.73-79.**

Folder 2.17 **[Miscellaneous notes on pumps, by O'Brien and Folsom.]**

Folder 2.18 **[Blueprints on pumps, University of California, Fluid Mechanics Laboratory, Feb. 1943.]**

Folder 2.19 **a) [Correspondence between R.G. Folsom and C.D. Bower, Fairbanks, Morse & Co., Pomona, 1944.]**

b) [Miscellaneous advertisements on pumps.]

Folder 2.20 ***Researches on peripheral pump*, by Yasutoshi Senoo, in *Reports of Research Institute for Applied Mechanics,* Vol.III, No. 10, July 1954, Kyushu University, pp.53-113.**

Folder 2.21 ***Influences of the suction nozzle on the characteristics of a peripheral pump and an effective method of their removal*, by Yasutoshi Senoo, in *Reports of Research Institute for Applied Mechanics,* Kyushu University, Vol.III, No. 11, Aug. 1954, pp.129-153.**

Folder 2.22 ***Theoretical research on friction pump*, by Yasutoshi Senoo, in *Reports of the Research Institute for Fluid Engineering,* Kyushu University, Vol.V, No. 1, Sept. 1948, pp.23.38.**

Folder 2.23 ***Water-ring self-priming pumps*, by E. Crewdson, with addendum by E.A. Jackson [preprint of the Institution of Mechanical Engineers, prepared for presentation at a General Meeting, London, Jan. 13, 1956],**

Physical Description: 13 p.

Folder 2.24 **"Über luftansaugende Kreiselpumpen", von Karl August Schmidt, von der Technischen Hochschule zu Hannover zur Erlangung der Würde eines Doctor-Ingenieurs genehmigte Dissertation, Universitätsverlag von Robert Noske in Borna-Leipzig, 1932,**

Physical Description: 41 p.

Folder 2.25 ***Selbstansaugende Kreiselpumpen und Versuche an einer neuen Pumpe dieser Art*, von Carl Ritter, Max Jänecke, Verlags-buchhandlung, Leipzig, 1931,**

Physical Description: 70 p.

Folder 2.26 ***Description of the experimental pump*, by Carl Ritter, 1930. [Translation, 15 l.]**

Folder 2.27 ***A comparison of regenerative pump theories supported by new performance data*, by Yasutoshi Senoo [preprint of the American Society of Mechanical Engineers, Paper no. 55-SA-44, for presentation at the ASME Diamond Jubilee Semi-Annual Meeting, Boston, Mass., June 19-23, 1955]**

Physical Description: 8 p.

Folder 2.28 ***Analysis of traction pumps,* by F.S. Weinig [preprint of the American Society of Mechanical Engineers for presentation at the ASME Diamond Jubilee Semi-Annual Meeting, Boston, Mass., June 19-23, 1955] 18 p. (Paper no. 55-SA-35).**

Folder 2.29 ***See* 2.28**

Folder 2.30 **[Miscellaneous pamplets on Aurora pumps, Burks series CT & 4CT close coupled turbine pumps, and Armstrong circulators, 1966-1969.]**

Folder 2.31 ***See* 2.27**

Folder 2.40 ***Performance of the periphery pump*, by H.W. Iversen, reprinted from *Transactions of the ASME,* Jan. 1955, pp.19-28.**

Folder 2.41 **[Westco catalogues and curves: miscellaneous material on pumping machinery, etc., 1926-1930.]**

Folder 2.42 **[Westco pump geometry and performance: tables and graphs re pumping machinery performance, etc., 1930.]**

Folder 2.43 ***Complete characteristics of a turbulence pump; log book* by Roy E. Leasure, March 11, 1947 to June 2, 1947,**

Physical Description: 1 folder, (handwritten).

Folder 2.47 ***See* 1.3**

Folder 2.48 ***Helical-grooved journal bearing operated in turbulent regime*, by C.Y. Chow and J.H. Vohr, *Journal of Lubrication Technology, Transactions of the ASME,* [1969], 12 p. (Paper no. 69-Lub-28).**

PUMPS

Box Box 1, Folder 3.1 ***Vortex pumps, or, slip in the centrifugal pump*, by Owen A. Price; includes *Communications,* in *Journal & Proceedings,* Institution of Mechanical Engineers, Vol.142, No.5, March 1940, pp.413-458. [Note by Iversen: Questionable vortex head equation - not fundamentally correct. Pointed out by discussers.]**

Folder 3.2 ***Affinity relations for trimming the impeller on a centrifugal pump,* by Arnold W. Zimmerman and William E. Zerbe, for Mech.131B, University of California, Department of Mechanical Engineering, Berkeley, Spring 1938, 1 folder, (handwritten). [Special data book.]**

Folder 3.3 **"Factors affecting the validity of the affinity laws for speed & trim," by William E. Zerbe, for ME 131B, University of California, Department of Mechanical Engineering, April 23, 1938,**

Physical Description: 16 l. (typescript).

Folder 3.4 ***Affinity laws for speed and trim,* by W.E. Zerbe & A.W. Zimmerman, for ME 131B, University of California, Department of Mechanical Engineering, Spring 1938,**

Physical Description: 43 l. (typescript and handwritten).

Folder 3.5 ***Centrifugal pump - impeller diam. relations,* by W.A. Blair and C.F. Hains, for ME 131B, University of California, Department of Mechanical Engineering, April 27, 1939,**

Physical Description: 47 l. (typescript and handwritten).

Folder 3.6 ***Cavitation characteristics of centrifugal pumps described by similarity considerations,* by G.F. Wislicenus, R.M. Watson, and I.J. Karassik, [1937-38?],**

Physical Description: 27 l. (typescript).

Folder 3.7 ***Some notes on a new method of representing cavitation results and application to determination of suction heads for centrifugal pumps for various services,* by G.F. Wislicenus, R.M. Watson, and I.J. Karassik, Worthington Pump and Machinery Corporation, Harrison, N.J., Dec.1937,**

Physical Description: 15 p.

Scope and Content Note

[Also includes accompanying letter to R.G. Folsom, dated March 12, 1938.]

Folder 3.8 **[Performance curves on U.C. Pump Test Lab pumps, Spring 1939, by H.E. Burrier,]**

Physical Description: 20 graphs.

Folder 3.9 **[Drawings, graphs and handwritten notes re centrifugal pump characteristics - curves and calculations, 1932-1937,]**

Physical Description: 18 l.

Folder 3.10 ***Notes on methods of self-priming centrifugal and rotary pumps handling water,* by R.G. Folsom, March 17, 1943.**

Physical Description: 2 / (typescript)

Folder 3.11 **[Letter to Editor of *Engineering,* England, from R.G. Folsom re specific speed of pumps, dated Nov.4, 1940.]**

Folder 3.12 **[Blueprints - solutions to problems on pumps.]**

Physical Description: 3 sheets.

Folder 3.13 ***Energy transfer between a fluid and a rotor for pump and turbine machinery,* by Sanford A. Mass, Chester W. Smith, and William R. Foote, Transactions of A.S.M.E., Dec.1941, 20 p. (Includes comments by R.G. Folsom). [Note by Iversen: Euler's equations in verbose form.]**

Folder 3.14 ***Centrifugal pumps and blowers,* by G. Ure Reid, Letter to Editor, *Engineering,* July 5, 1946. p.16. [Note by Iversen: Head curve from flow area reduction due to *dead water* in impeller.]**

Folder 3.15 **[References and problems for Chapter 2, ME 127,]**

Physical Description: 1 folder, (typescript and handwritten

Folder 3.16 **[Miscellaneous pamphlets, newsletters from Byron Jackson, etc. on centrifugal pumps.]**

a) ***Design and operating problems of high pressure centrifugal pumping cycles,*** **by Igor J. Karassik, reprint of four articles from** ***National Engineer,*** **July-Nov.1946.**

Physical Description: 23 p.

b) ***The new Fairbanks-Morse bladeless sewage and trash pump,*** **Fairbanks, Morse & Co., Chicago, Ill. 15 p. (Bulletin 5400K-1).**
c) ***New problems solved by graphic instruments, The Graphic,*** **The Esterline-Angus Co., Inc., Indianapolis, 1939. 4 p. (Bulletin no.642).**
d) [Reference chart to Jenkins figure numbers for evaporator connections], Jenkins Bros., New York.
e) [Advertisement for the Foster (Air-Raid) Siren, Foster Engineering Company, May 1943.]
f) [Advertisement for the Motorpump, by Ingersoll-Rand, New York, Sept.1941.]
g) ***Specific speed curves for single stage, centrifugal, mixed flow and axial flow pumps,*** **Hydraulic Institute, New York, Dec.1940.**

Physical Description: 2 p.

h) ***Motor-driven pump competes with water-powered triplex, F-M News,*** **May-June 1941. pp.11-12.**

Folder 3.16 **i) [Material from** ***F-M News,*** **July-August 1941, p.3-6 re pictures of Fairbanks-Morse Ashland boat, F-M pumps and motors, Sanford Pumping Plant (Fla.), etc.]**
j) ***Upper limits of specific speed for double suction single stage centrifugal pumps,*** **by A. Hollander,** ***Byron Jackson Newsletter,*** **Vol.VI, No.8, Nov.1, 1932,**

Physical Description: 6 l.

k) ***Engine-driven centrifugal pipe line pumps, Byron Jackson Newsletter,*** **Vol.X, No.11, Nov.1, 1937,**

Physical Description: 6 l.

l) ***Determination of operating points of centrifugal pumps working on pipe lines, Byron Jackson Newsletter,*** **Vol.X, No.16, March 15, 1938,**

Physical Description: 7 l.

Folder 3.17 **a)** ***Discussion of 'Centrifugal-pump performance as a function of specific speed,' by A.J. Stepanoff,*** **by R.G. Folsom, Jan.6, 1943,**

Physical Description: 2 1. (typescript).

b) [Advertisements on centrifugal pumps, 1941.]

Folder 3.18 ***Centrifugal-pump performance as a function of specific speed,*** **by A.J. Stepanoff,** ***Transactions of the A.S.M.E.,*** **[1943],**

Physical Description: 8 p.

Folder 4.1 ***Experimental and theoretical studies of surging in continuousflow compressors,*** **by Robert O. Bullock, Ward W. Wilcox, and Jason J. Moses, National Advisory Committee for Aeronautics, Washington, D.C., 1946, 13 p. (Report no.861).**

Folder 4.2 ***Investigation of flow fluctuations at the exit of a radialflow centrifugal impeller,*** **by Joseph T. Hamrick and John Mizisin, National Advisory Committee for Aeronautics, Washington, D.C., Oct.13, 1952, 20 p. (NACA Research memorandum E52H11).**

Folder 4.3 ***Two-dimensional compressible flow in centrifugal compressors with logarithmic-spiral blades,*** **by Gaylord O. Ellis and John D. Stanitz, National Advisory Committee for Aeronautics, Washington, D.C., Jan.1951, 46 p. (NACA Technical note 2255).**

Folder 4.4	***Experimental investigation of flow in the rotating passages of a 48-inch impeller at low tip speeds,*** **by Donald J. Michel, Ambrose Ginsburg, and John Mizisin, National Advisory Committee for Aeronautics, Washington, D.C., June 26, 1951, 37 p. (NACA Research memorandum E51D20).**
Folder 4.5	***An analysis of flow in rotating passage of large radialinlet centrifugal compressor at tip speed of 700 feet per second,*** **by Vasily D. Prian and Donald J. Michel, National Advisory Committee for Aeronautics, Washington, D.C., Dec.1951, 46 p. (NACA Technical note 2584).**
Folder 4.6	***Determination of centrifugal-compressor performance on basis of static-pressure measurements in vaneless diffuser,*** **by Ambrose Ginsburg, Irving A. Johnsen, and Alfred C. Redlitz, National Advisory Committee for Aeronautics, Washington, D.C., July 20, 1949, 25 p. (NACA Technical note 1880).**
Folder 4.7	***Pressure distributions on the vanes of a radial flow impeller,*** **by D.A. Morelli (prepared for presentation to the Heat Transfer and Fluid Mechanics Institute, Stanford University, June 1951), 12 l. (typescript).**
Folder 4.8	**a) *Measured performance of pump impellers,* by William C. Osborne and Dino A. Morelli, Sr. (prepared for presentation at the Annual Meeting, New York, Nov.26-Dec.1, 1950 of the American Society of Mechanical Engineers), 14 p. (ASME Paper no.50-A-90).** **b) *Evaluation of a two dimensional centrifugal pump impeller,* by John H. Beveridge, and Dino A. Morelli, (prepared for presentation at the Annual Meeting, New York, Nov.26-Dec.1, 1950, of the American Society of Mechanical Engineers), 8 l. (ASME Paper no.50-A-147).**
Folder 4.9	***Inadequacy of the conception 'The specific number of Revolutions', in the calculations concerning hydraulic turbo-engines,*** **by Benjamin Meisel, *Comm. de la Soc. Math. de Kharkof,* Ser.4, T.12, 1935, pp.115-118.**
Folder 4.10	**[Blueprints and letters re Byron Jackson pump tests, 1932-1939,]** **Physical Description:** 1 folder.
Folder 4.11	**[Thrust characteristics tabulations, by M. Ruth, April 1941,]** **Physical Description:** 1 folder, (typescript).
Folder 4.12	**[3 De Laval pump acceptance tests data; blueprints and calculations (handwritten notes),]** **Physical Description:** 1 folder.
Folder 4.13	***Two-dimensional compressible flow in centrifugal compressors with straight blades,*** **by John D. Stanitz and Gaylord O. Ellis, National Advisory Committee for Aeronautics, Washington, D.C., 1950, 23 p. (NACA Report 954).**
Folder 4.14	***An investigation of backflow phenomenon in centrifugal compressors,*** **by William A. Benser and Jason J. Moses, National Advisory Committee for Aeronautics, 1945, 15 p. (NACA Report no.806).**
Folder 4.15	***A rapid approximate method for determining velocity distribution on impeller blades of centrifugal compressors,*** **by John D. Stanitz and Vasily D. Prian, National Advisory Committee for Aeronautics, Washington, D.C., July 1951, 31 p. (NACA Technical note 2421).**
Folder 4.16	***Improvement of pump performance by impeller eye throttling,*** **by Mitsukiyo Murakami and Naomichi Heya [preprint prepared for presentation at the Applied Mechanics and Fluids Engineering Conference, Evanston, Ill., June 16-18, 1969], American Society of Mechanical Engineers, New York, 8 p. (An ASME Publication).**
Folder 5.1	**[Miscellaneous correspondence between M.P. O'Brien and R.G. Folsom and the Byron Jackson Pump Company, Los Angeles, re impellers, 1938-1943. Also includes blueprints.]**
Folder 5.2	**[Blueprints; calculations; brochures on centrifugal pumps, Pacific Pumping Company, Portland and San Francisco, 1939.]**
Folder 5.3	**a) [Calculations and blueprints on centrifugal pump efficiencies and specific speeds, 1937.]** **b) [Tables, correspondence, graphs, etc. re Byron Jackson 12-inch pumps, 1937.]** **c) [Tabulated data and pump curves, by F. Kinley.]**
Folder 5.4	**[Miscellaneous handwritten calculations on Byron Jackson pumps, 1937-1938,]** **Physical Description:** 1 folder.
Folder 5.5	***Centrifugal pumps,*** **by Hans Lorenz,** **Physical Description:** 6 p. (handwritten). [Also typescript copy.]
Folder 5.6	***Some types of centrifugal pumps,*** **by Wm. O. Webber, *Transactions of the A.S.M.E.,* Vol.XXVI, 1905, pp.764-800.**
Folder 5.7	***Development of high efficiency in centrifugal pumps,*** **by A.F. Sherzer, *Engineering News-Record,* Vol.91, No.14, Oct. 4, 1923, pp.561-564.**

Folder 5.8 ***Dimensional analysis and the performance of centrifugal pumps and fans,*** **by J. Jennings, *The Engineer,* May 19, 1939, pp.614-615.**

Folder 5.9 **[Material on Goulds Pumps, curves and related information,]**

Physical Description: 2 p.

Folder 5.10 **[Miscellaneous notes, tables, charts, etc. on specific speed, 1937.]**

Folder 5.11 ***History and development of the Grand Coulee Pumping Plant,*** **by E.B. Moses,**

Physical Description: 22 l. (typescript).

Folder 5.12 ***Mechanical design and construction of the Grand Coulee pumps,*** **by Ira Morgan White (prepared for presentation at the Semi-Annual Meeting of the American Society of Mechanical Engineers, June 27-30, 1949, San Francisco), 10 p. (ASME Paper no.49-SA-21).**

Folder 5.13 ***Predesign investigations of hydraulic features for Grand Coulee Pumping Plant,*** **by G.J. Hornsby,**

Physical Description: 9 l.

Folder 5.14 ***Development of the hydraulic design for the Grand Coulee pumps,*** **by Carl Blom, *Transactions of the ASME,* [1949], 12 p. (ASME Paper no.49-SA-8).**

Folder 5.15 ***Hydraulic problems in connection with the design of the Granby Pumping Plant,*** **by Eliot B. Moses (prepared for presentation at the Annual Meeting of the American Society of Mechanical Engineers, Atlantic City, N.J., Dec.1-5, 1947), 12 p. (ASME Paper no.47-A-93).**

CENTRIFUGAL PUMPS-ACTUAL FLOW

Box Box 2, Folder 6.1 ***1:4 dredge pump model, Progress report #3: Experimental work made at the Bonneville Hydraulic Laboratory,* by A.J. Gilardi, June 16, 1936,**

Physical Description: 33 l. (typescript).

Folder 6.2 ***Prediction of centrifugal-pump performance,* by R.J.S. Pigott, in *Transactions of the A.S.M.E.,* August 1945, pp.439-449.**

Folder 6.3 ***Principles of pumping machinery,* by M.P. O'Brien and R.G. Folsom, for M.E.127, Spring semester 1940, University of California, Berkeley, [dated] December 1939,**

Physical Description: 40 l. (typescript). [Manuscript copy.]

Folder 6.4 **[4 photographs of dredge pump model, March 1936,]**

Physical Description: 1 folder.

Folder 6.5 ***Abmessungen der Pumpe und besondere Versuchseinrichtungen an der Pumpe,* [n.p., n.d.],**

Physical Description: 3 l.

Folder 6.6 ***Potential flow through centrifugal pumps and turbines,* by E. Sorensen, National Advisory Committee for Aeronautics, Washington, D.C., April 1941, 35 p. (NACA Technical memorandum no.973).**

Folder 6.7 ***Contribution to regulation of centrifugal pumps and investigations concerning the theoretical and actual delivery head,* by Wilhelm Siebrecht (Verlag, Berlin - 1929, Forschungsarbeiten, Number 321), translated by Fred Thompson, University of California, Department of Mechnical Engineering, Berkeley, Sept.15, 1936, 50 l. (typescript). (Works Progress Administration Project no.58, Translation no.187).**

Folder 6.8 ***Alteration of fundamental equations,* by C. Pfleiderer (in *Die Kreisenpumpen,* 1932, Berlin, Sections 41-47 Inc.), translated from German by E. Beatrice Barnes, University of California, Department of Mechanical Engineering, Berkeley, [n.d.], 57 l. (typescript). (Works Progress Administration Project No.6090-5070, Translation no.265.)**

Folder 6.9 ***The hydrodynamic theory of turbines and centrifugal pumps,* by Bruno Eck, in *Engineering,* Jan.22, 1926, pp.98-101, 125-127. - *Letters to the editor [in re...]*, in *Engineering,* March 12, 1926, pp.331-333.**

Folder 6.10 ***Prediction of performance curves of high speed centrifugal pump runners,* by C. Pfleiderer (VDI-Verlag GMBH, Berlin, 1938), translated by N.Y.A., University of California, Department of Mechnical Engineering, Fluid Mechanics Laboratory, 1938,**

Physical Description: 41 l. (typescript).

Folder 6.11 **[Miscellaneous notes, calculations, and photos of centrifugal pumps, 1939-1941,]**

Physical Description: 1 folder, (handwritten).

Folder 6.12 ***Determination of delivery load of centrifugal pumps,* by Benjamin Meixel, translated by J.W. Cameron [n.d.],**

Physical Description: 12 l. (handwritten).

Folder 6.13 ***Balanced design with double volute case centrifugal pumps,* Byron Jackson Newsletter, Vol.XII, No.21, Sept.1, 1941,**

Physical Description: 5 p.

Folder 6.14 ***The evolution and development of the bladeless sewage and trash pump,* by R.C. Glazebrook, Fairbanks, Morse & Co., Chicago, Ill., Nov.4, 1949,**

Physical Description: 16 l.

Folder 6.15	***Delivery head ratios of radial centrifugal pumps with logarithmically spiral blades,*** **by A. Buseman (Zeitschrift füur angewandte *Mathematik und Machavik,* Band 8, Heft 5, Oktober 1928), translated by E.B. Barnes, University of California, Department of Mechanical Engineering, Berkeley, July 14, 1938, 28 l. (typescript).(Works Progress Administration Project No.6090-5970, Translation no.345).**
Folder 6.16	***Approximate method for calculating the head developed by an impeller with a finite number of blades,*** **by S. Yedidiah, (prepared for presentation at the Applied Mechanics and Fluids Engineering Conference, Evanston, Ill., June 16-18, 1969), American Society of Mechanical Engineers, New York, 9 p. (ASME publication 69-FE-8).**
Folder 6.17	***A review of slip factors for centrifugal impellers,*** **by F.J. Wiesner, *Transactions of the ASME,* October 1967, pp.558-572.**

COMPRESSIBLE FLOW-CENTRIFUGAL & MIXED FLOW IMPELLERS

Box Box 2, Folder 7.1 ***Two-axial-symmetry solutions for incompressible flow through a centrifugal compressor with and without inducer vanes,*** **by Gaylord O. Ellis, John D. Stanitz, and Leonard J. Sheldrake, National Advisory Committee for Aeronautics, Washington, D.C., Sept.1951, 34 p. (NACA Technical note 2464).**

Folder 7.2 ***One-dimensional compressible flow in vaneless diffusers of radial- and mixed-flow centrifugal compressors, including effects of friction, heat transfer and area change,*** **by John D. Stanitz, National Advisory Committee for Aeronautics, Washington, D.C., Jan.1952, 61 p. (NACA Technical note 2610).**

Folder 7.3 ***See*** **4.3**

Folder 7.4 ***Two-dimensional flow on general surfaces of revolution in turbomachines,*** **by John D. Stanitz and Gaylord O. Ellis, National Advisory Committee for Aeronautics, Washington, D.C., March 1952, 44 p. (NACA Technical note 2654).**

Folder 7.5 ***See*** **4.15**

Folder 7.6 **a)** ***Increase in stable-air-flow operating range of a mixed-flow compressor by means of a surge inhibitor,*** **by Eugene B. Laskin and Milton G. Kofskey, National Advisory Committee for Aeronautics, Washington, D.C., April 3, 1947, 11 p. (NACA Research memorandum no. E7C05).**

b) ***Performance of a mixed-flow impeller in combination with a semivaneless diffuser,*** **by Eugene B. Laskin and Milton G. Kofskey, National Advisory Committee for Aeronautics, Weshington, D.C., April 4, 1947, 8 p. (NACA Research memorandum E7C05a).**

Folder 7.7 ***Method of analysis for compressible flow through mixed-flow centrifugal impellers of arbitrary design,*** **by Joseph T. Hamrick, Ambrose Ginsburg, and Walter M. Osborn, National Advisory Committee for Aeronautics, Washington, D.C., Aug. 1950 29 p. (NACA Technical note 2165).**

Folder 7.8 ***Approximate design method for high-solidity blade elements in compressors and turbines,*** **by John D. Stanitz, National Advisory Committee for Aeronautics, Washington, D.C., July 1951, 76 p. (NACA Technical note 2408).**

Folder 7.9 ***Analysis of flow in a subsonic mixed-flow impeller,*** **by Chung-Hua Wu, Curtis A. Brown, and Eleanor L. Costilow, National Advisory Committee for Aeronautics, Washington, D.C., Aug.1952, 38 p. (NACA Technical note 2749).**

Folder 7.11 ***Method of analysis for compressible flow through mixed-flow contrifugal impellers of arbitrary design,*** **by Joseph T. Hamrick, Ambrose Ginsburg, and Walter M. Osborn, National Advisory Committee for Aeronautics, Washington, D.C., 1952, 10 p. (Report 1082).**

Folder 7.12 ***Two-dimensional compressible flow in turbomachines with conic flow surfaces,*** **by John D. Stanitz, National Advisory Committee for Aeronautics, Washington, D.C., 1949, 24 p. (NACA Report 935).**

CENTRIFUGAL PUMPS-ACTUAL FLOW IN IMPELLER AND CASING

Box Box 2, Folder 8.1 ***Pressure distributions on the vanes of a radial flow impeller,*** **by D.A. Morelli, prepared for Heat Transfer and Fluid Mechanics Institute, Stanford University, June 1951, 9 1. [Also includes misc. correspondence, and handwritten notes by Iversen.]**

Folder 8.2 ***Measured performance of pump impellers,*** **by William C. Osborne, and Dino A. Morelli, Sr., (prepared for presentation at the Annual Meeting, American Society of Mechanical Engineers, New York, N.Y., Nov.26-Dec.1, 1950), 15 p. (ASME Paper no.50-A-90).**

Folder 8.3 ***Evaluation of a two dimensional centrifugal pump impeller,*** **by John H. Beveridge, and Dino A. Morelli, (prepared for presentation at the Annual Meeting, American Society of Mechanical Engineers, New York, N.Y., Nov.26-Dec.1, 1950), 8 l. (ASME Paper no.50-A-147).**

Folder 8.4 ***Head and flow observations on a high efficiency free centrifugal pump impeller,*** **by W.C. Osborne and D.A. Morelli [1949],**

Physical Description: 27 1. (typescript).

Folder 8.7 **[Miscellaneous handwritten notes and outline on centrifugal pumps, by R.G. Folsom.]**

Physical Description: 1 folder.

Folder 8.8 **[Blueprints of axial thrust characteristics of Pump No.4 at variable clearance and speed; and efficiency and thrust ratio with plain impellers and with impellers with ribs, University of California, Department of Mechanical Engineering, Pump Testing Laboratory, n.d.]**

Physical Description: 1 folder.

Folder 8.9 ***Centrifugal-pump performance as affected by design features,*** **by R.T. Knapp, *Transactions of the A.S.M.E.,* April 1941, pp.251-260.**

Folder 8.10 ***Leakage loss and axial thrust in centrifugal pumps,*** **by Alexey J. Stepanoff, *Transactions of the A.S.M.E.,* Vol.54, 1932, pp.65-111. (HYD-54-5).**

Folder 8.11 ***The Ter Meer continuous centrifugal,*** **by H.F. Irving, *Transactions of the A.S.M.E.,* April 1946, pp.328-332.**

AXIAL FLOW PUMP DESIGN

Box Box 2, Folder 9.1 **[Miscellaneous calculations and design computations for pumps, Peerless Pump No.2, 1938-39.]**

Physical Description: 1 folder (typescript, handwritten).

Folder 9.2 **[Miscellaneous calculations, blueprints, etc. for Peerless Pump No.1, 1938.]**

Physical Description: 1 folder (handwritten).

Folder 9.3 **[Blueprints from the Food Machinery Corp., on ditch pump impeller, standard bowl, bowl vanes, suction manifold, diffuser cone, 1938.]**

Folder 9.4 **[Miscellaneous material, correspondence, tables, blueprints, graphs on propeller pumps, 1934-36.]**

Physical Description: 1 folder (handwritten)

Folder 9.5 **[Blueprints of Byron Jackson Co. propeller pumps, 1925, 1932.]**

Physical Description: 1 folder, 8 blueprints.

Folder 9.6 **[Miscellaneous correspondence, calculations, notes, on Byron Jackson Co. propeller pumps, 1936].**

Physical Description: 1 folder.

Folder 9.7 **[Miscellaneous calculations, curves, notes, etc. on propeller pumps, 1936].**

Physical Description: 1 folder (handwritten).

Folder 9.8 ***Graphic solution of the problem of design of impellers for propeller pumps,* by Charles F. Hains, for Mech. Eng. 199, University of California, Dec. 1938,**

Physical Description: 1 v. (unpaged).

Folder 9.9 ***Analysis of single- and two-phase flows in turbopump inducers,* by P. Cooper, *Journal of Engineering for Power,* Oct. 1967, pp.577-588.**

LOSSES IN CENTRIFUGAL PUMPS

Box Box 2, Folder 10.1 ***Principles of pumping machinery,*** **Chapter IV, (Centrifugal pumps), by R.G. Folsom and M.P. O'Brien, Dec. 1939,**

Physical Description: 31 1., [3 copies].

Folder 10.2 ***Automatic priming systems for centrifugal pumps,*** **by Frank S. Broadhurst, *Engineering and Contract Record,* Oct. 18, 1939, De Laval Steam Turbine Company, Trenton, N.J.,**

Physical Description: 4 p.

Folder 10.3 ***Experiments on centrifugal pumps,*** **by Werner Krumnow (unpublished dissertation for degree of doctor-engineer), Jan.16, 1934. Translation by Peter Goedewaagen.**

Physical Description: 63 1. (typescript).

Folder 10.5 ***Leakage in capillary seals of hydraulic valves and pumps,*** **by Paul G. Exline, reprinted from *Product Engineering,* April 1946,**

Physical Description: 4 p.

Folder 10.6 ***Studies of submergence requirements of high-specific-speed pumps,*** **by H.W. Iversen, reprinted from the *Transactions of the ASME,* May 1953, pp.635-641.**

Folder 10.7 ***Fluid flow friction factors for pipes, valves and fittings,*** **by V.L. Streeter, reprinted from *Product Engineering,* July 1947,**

Physical Description: 2 p.

Folder 10.8 ***Resistance to rotation of disks in liquids,*** **by A.H. Church and S.A. Gertz, New York University, June 1949,**

Physical Description: 16 1. (typescript).

Folder 10.9 **[Miscellaneous disk friction material, 1950.]**

Physical Description: 1 folder (handwritten).

Folder 10.10 ***Friction of flat discs rotated in water,*** **by J.N. LeConte, *Journal of Electricity, Power and Gas,* Dec. 3, 1910, pp.483-488. [Folder also includes related correspondence.]**

Folder 10.11 **[Miscellaneous pamphlets on centrifugal pumps.]**

a1) Carter self-priming centrifugal pumps, Ralph B. Carter Co., Bulletin nc.112 [n.d.]
a2) Carter self-priming centrifugal pumps, Ralph B. Carter Co., Bulletin no. 4310, July 1944.
b) Gorman-Rupp centrifugal pumps, The Gorman-Rupp Company, Mansfield, Ohio, Bulletin no.12-B [n.d.]
c) Gould pumps- priming methods, Goulds Pumps, Inc., Seneca Falls, N.Y., 780-2, June 30, 1941.
d) Byron-Jackson double volute case centrifugal pumps, Byron Jackson Co., Los Angeles, Calif. [n.d.]
e) Goulds Pumps - handy data on power pumping, The Goulds Manufacturing Co., Seneca Falls, N.Y., 1924.

Folder 10.12 **[Miscellaneous notes, calculations, comments, etc. re centrifugal pumps, 1936.]**

Physical Description: 1 folder.

Folder 10.13 ***Vorausbestimmung der Kennlinien schnellaufiger Kreiselpumpen,*** **von C. Pfleiderer, Mit 33 Bildern im Text, Berlin, 1938,**

Physical Description: 45 p.

Folder 10.14 **[Notes on Chapter IV, *Spiral casing of centrifugal pumps* .]**

Physical Description: 5 p. (handwritten).

Folder 10.15 ***Windage losses of small turbines,*** **by J.W. Hoyt and C.D. Runge, U.S. Naval Ordnance Test Station, Inyokern, China Lake, Calif., Sept. 22, 1952, 18 p. (Navord Report 1993, and NOTS 586).**

Folder 10.16 **a) [Note on hydraulic machinery shock losses, 1922]; excerpt from *Aus der Ingenieurforschung: "* Uber den Einflub der Lage der Eintrettskenten von Kreiselpumpenschaufeln and Dauerstandfestigkeit von Stählen," pp.1505-1506.**

b) "Pumpen-Spiralgehäuse mit Drallströmung," *Aus der Ingenieurforschung,* March 1937, pp.391-392.

Folder 10.17 ***Operation of centrifugal boiler-feed pumps,* by Hans Gartmann, reprinted from *Combustion,* Jan. 1941,**

Physical Description: 2 p.

Folder 10.18 ***Turbulence in centrifugal pumps,* by J.W. MacMeeken, *Transactions of the American Society of Mechanical Engineers,* Nov. 30, 1931,**

Physical Description: 8 p.

Folder 10.19 ***The effect of the size and shape of passages of guide vanes upon the characteristics of a high pressure single stage centrifugal pump,* by T. Kasai, *Journal of the Society of Mechanical Engineers, Japan,* Vol. XXXV, July 1932, no. 183, pp.666-677. (some pages typescript).**

Folder 10.20 ***On the influence of finite spacing between blades in radial centrifugal pumps,* by Ernst Schmidt, from *Forschung auf dem Gebiete des Ingenieurwesens,* Jan.-Feb. 1938. Translated by E.B. Barnes, University of California, Department of Mechanical Engineering, Works Projects Administration Project 11608-C-6, 5 1. (Translation no. 372).**

Folder 10.21 ***Flow in spiral casings of water turbines and centrifugal pumps,* by Harald Kranz (dissertation approved by the Technical College of Hanover for obtaining the degree of doctor-engineer), July 1934, 41 1. Translation by Irene Freuder, University of California, Department of Mechanical Engineering.**

Folder 10.22 ***Thermodynamic efficience of centrifugal boiler feed pumps,* by I.J. Karassik, reprinted from *Southern Power and Industry,* November 1941, RP-217,**

Physical Description: 2 p.

DISK FRICTION STUFFING BOX AND BEARING LOSSES

Box Box 2, Folder 11.1 ***The frictional resistance of discs in casings,*** **by F. Schultz-Grunow, from *Z. angew Math. Mech,* 15, 1935, pp.191-204. Translated by M.P. O'Brien, University of California, Department of Mechanical Engineering. (Translation no. 75).**

Folder 11.2 **[Miscellaneous notes, correspondence re disk friction formulas; chart from Byron Jackson Company.] (mostly handwritten).**

Physical Description: 1 folder

Folder 11.3 ***Journal of Electricity, Power and Gas,*** **Vol.XXV, No. 23, Dec. 3, 1910, San Francisco, Calif.**

Folder 11.4 **[Miscellaneous articles, correspondence, blueprints re shaft seals and stuffing boxes, 1940-1947].**

Physical Description: 1 folder.

Folder 11.5 ***Centrifugal-pump performance as a function of specific speed,*** **by A.J. Stepanoff, presented at Annual Meeting, New York, N.Y. of ASME, Nov. 30-Dec. 4, 1942. Issued in *Transactions,* August 1943, pp.629-647.**

Folder 11.6 **[Miscellaneous material: blueprints on centrifugal pumps (energy flow), stuffing box constructions; graphs; Byron Jackson News Letter, March 15, 1936 - *Power balance in a deepwell turbine* ; Crane Packing Company advertisement; *Stuffingbox for refinery pumps packing vs. mechanical seal,* by A. Hollander, March 1944.]**

Physical Description: 1 folder

Folder 11.7 **[Notes on bearing losses; outline.]**

Physical Description: 5 l. (handwritten).

Folder 11.8 ***Factors influencing power loss in bearings,*** **abstracted from a paper presented by J.T. Burwell, *et al,* in *Machine Design,* Jan. 1941, pp.54-57, 106-110.**

Folder 11.9 ***Some problems in the lubrication of vertical journal bearings,*** **by A.I. Ponomareff, and E.D. Howe, *Transactions of the American Society of Mechanical Engineers,* 1932,**

Physical Description: 8 p.

Folder 11.10 **[Figures for Chapter IV (ME 127); Bulletin no. 64 of American-Marsh Pumping Equipment, Type Q centrifugal pump; *Some physical properties of water and other fluids,* by R.L. Daugherty, ASME, HYD-57-2, 1934.]**

Physical Description: 1 folder.

Folder 11.11 ***Critical speeds of shafts in fluids,*** **by Levi James Knight, Jr., (unpublished Master's thesis), University of California, Department of Mechanical Engineering, 1938,**

Physical Description: 21 l. (typescript).

PROPELLER PUMPS, ME 127 - CHAPTER V

Box Box 2, Folder 12.1 ***Propeller pumps and fans,* Chapter 5**

Physical Description: (carbon copy). [22 l.]

Folder 12.2 **[Figures for Chapter 5.]**

Physical Description: 3 p.

Folder 12.3 ***Design of propeller pumps* (Summary), by Morrough P. O'Brien and Richard G. Folsom,**

Physical Description: 2 p. (typescript).

Folder 12.4 **a) *The design of propeller pumps and fans,* by Morrough P. O'Brien and Richard G. Folsom, U.C. Press, Berkeley, 1939,**

Physical Description: 18 p.

b) [Working papers, notes for preparation of *The design of propeller pumps and fans* ; supplementary parts for addition to the publication.]

Physical Description: 1 notebook.

***The design of propeller pumps and fans,* by Morrough P. O'Brien and Richard G. Folsom (Verifax copy).**
d) [Correspondence between A.L. Kimball and R.G. Folsom re above publication.]

Physical Description: 1 folder.

Folder 12.5 ***Results of systematic investigations on secondary flow losses in cascades,* Part I: Secondary flow losses in compressor cascades of profile NACA 8410, by K. Gersten, Braunschweig, June 28, 1955, 33 p. (Report no.54/29a).**

Folder 12.6 ***Pressure distributions on the blade of an axial flow propeller pump,* by D.A. Morelli and R.D. Bowerman, California Institute of Technology, Hydrodynamics Laboratory, Pasadena, Calif., Nov. 1952. 15 p. (Report no.E-19.2).**

Folder 12.7 **[Miscellaneous material re Peerless propeller design information, 1937-1939.]**

Physical Description: 1 folder.

Folder 12.8 **[Miscellaneous material, graphs, test data, re propeller pump cavitation limits, 1939.]**

Physical Description: 1 folder.

Folder 12.9 **[Miscellaneous material on propeller pumps, prepared by M.P. O'Brien and R.G. Folsom, ASME, 1935.]**

Physical Description: 1 folder.

Folder 12.10 ***Methods of predicting the tip clearance effects in axial flow turbomachinery,* by B. Lakshminarayana, *Transactions of the ASME,* 1969, 14 p. (Paper No.69-WA/FE-26).**

FANS, CHAPTER VI

Box Box 3, Folder 13.1 ***A study of surging in fan or compressor systems,*** **by R.C. Binder, reprinted from *Journal of the Franklin Institute,* Vol.241, No.2, Feb. 1946, pp.125-136.**

Folder 13.2 ***Performance of centrifugal fans for electrical machinery,*** **by Carl J. Fechheimer, reprinted from paper presented at the Spring Meeting of the American Society of Mechanical Engineers, Cleveland, Ohio, May 26-29, 1924,**

Physical Description: 57 p.

Folder 13.3 ***What we make: Sturtevant puts air to work - Sturtevant Condensed Catalog Engineering Data,*** **B.F. Sturtevant Company, Hyde Park, Boston, Mass., 1945, 200 p. (Catalog no.500).**

Folder 13.4 ***Presentation of centrifugal-compressor performance in terms of nondimensional relationships,*** **by B.E. Del Mar, *Transactions of the A.S.M.E.,* Aug.1945, pp.483-490.**

Folder 13.5 ***Ejectors for solvent recovery operations,*** **by J.R. Shields, ASME, Spring 1947, pp.20-29.**

Folder 13.6 ***Sound measurement test code for centrifugal and axial fans,*** **by the Engineering Committee of National Association of Fan Manufacturers, Detroit, Mich., 1942, 7 p. (Bulletin no.104).**

Folder 13.7 ***Engine supercharging, Aeronautical Review,*** **Sept.1941, pp.41-49.**

Folder 13.8 **[Miscellaneous advertisements, charts, blueprints, articles, on centrifugal pumps and fans.]**

Physical Description: 1 folder.

a) *Some suggestions on the transmission of compressed air; a critical review of the subject,* by Walter S. Weeks, *Engineering and Mining Journal,* Vol.140, No.10, Oct.1939.
b) *Experiments and experiences with blowers,* by Henry I. Snell, *Transactions of the A.S.M.E.,* Vol.IX.
c) *Air propulsion,* by Morgan Brooks, presented at the Spring Meeting of the American Society of Mechanical Engineers, Worcester, Mass., June 4-7, 1918. (Paper no.1642).
d) *Operation of pressure fans in series,* by Walter S. Weeks and Vitaly S. Grishkevich, American Institute of Mining and Metallurgical Engineers, Inc., New York, 1930. (Technical publication no.339).
e) *A study of the splitting of an air current,* by Walter S. Weeks, Clifford H. Gest, and Thomas H. McClelland, American Institute of Mining and Metallurgical Engineers, June 1933. (Contribution no.54).

Folder 13.8 **f) *The intake orifice and a proposed method for testing exhaust fans,* by N.C. Ebaugh and R. Whitfield, *Transactions of A.S.M.E.,* 1934. (PTC-56-3)**
g) *Influence of inlet boxes on the performance of induced-draft fans,* by Lionel S. Marks, and E.A. Winzenburger, *Transactions of A.S.M.E.,* 1934. (FSP-54-16).
h) *Influence of bends in inlet ducts on the performance of induced-draft fans,* by L.S. Marks, J. Lomax and R. Ashton, *Transactions of A.S.M.E.,* 1932. (FSP-55-9).
i) *Parallel operation of fans,* by H.F. Hagen, reprinted from *Power,* May, Jan., Feb., July 1936.
j) *Centrifugal fans; performance characteristics and methods of testing,* by George Samuel Wilson, William Lyle Dudley and Harry John McIntyre, University of Washington, Engineering Experiment Station, Seattle, March 1926, 39 p. (Engineering Experiment Station Series Bulletin no. 34).
k) *A new high-speed fan,* by Carl J. Fechheimer, *Transactions of A.S.M.E.,* [n.d.], pp.219-223. (APM-51-20).
l) *Pulsation of air flow from fans and its effect on test procedure,* by Harold F. Hagen, *Transactions of A.S.M.E.,* 1932,

Physical Description: 5 p.

Folder 13.9 **a) [Correspondence, computations and notes by A.I. Brown to R.G. Folsom, 1934]**
b) *The performance of propeller fans,* by A.I. Brown, *Ohio State University Studies,* Engineering Series, Vol. II, No. 3, Part I, May 1933, 33 p. (Engineering Experiment Station Bulletin no. 77).

Folder 13.10 ***Standard text code for centrifugal and axial fans,*** **by Engineering Committee of the National Association of Fan Manufacturers and Fan Test Code Committee of the American Society of Heating and Ventilating Engineers. The Association, Detroit, Mich., July 1938, 23 p. (Bulletin no. 103).**

Folder 13.11 ***Performance test of ventilating fans, Broadway Low Level Tunnel, Joint Highway District No. 13, State of California,*** **by Hunter & Hudson Engineers, 1936,**

Physical Description: 1 folder.

Folder 13.12 ***The theory of propeller fans,*** **by Morrough P. O'Brien and James E. Gosline, 1931. 1 folder (typed and handwritten notes).**

Folder 13.13 ***Charts for the analysis of ducted fans,*** **by J.F.M. Scholes, Commonwealth of Australia, Council for Scientific and Industrial Research, Division of Aeronautics, Melbourne, 1945.**

Physical Description: 30 p.

Folder 13.14 ***Ducted fans: design for high efficiency,*** **by G.N. Patterson, Commonwealth of Australia, Australian Council for Aeronautics, Council for Scientific and Industrial Research, July 1944. 28 p. (Report ACA-7).**

Folder 13.15 ***Ducted fans: approximate method of design for small slipstream rotation,*** **by G.N. Patterson, Commonwealth of Australia, Australian Council for Aeronautics, Aug.1944. 19 p. (Report ACA-8).**

Folder 13.16 ***Ducted fans: effect of the straightener on overall efficiency,*** **by G.N. Patterson, Commonwealth of Australia, Australian Council for Aeronautics, Melbourne, Sept.1944. 14 p. (Report ACA-9).**

Folder 13.17 ***Ducted fans: high efficiency with contra-rotation,*** **by G.N. Patterson, Commonwealth of Australia, Australian Council for Aeronautics, Melbourne, Oct.1944. 44 p. (Report ACA-10).**

Folder 13.18 ***Influence of wall boundary layer upon the performance of an axialflow fan rotor,*** **by Emanuel Boxer, National Advisory Committee for Aeronautics, Washington, D.C., Feb.1951. 21 p. (Technical note 2291).**

Folder 13.19 ***Design of an axial flow cooling fan with adjustable inlet guide vanes,*** **(Volume 19 of a series of articles on compressor and fan design, written by German engineers), U.S. Navy Department, Washington, D.C., April 1946.**

Physical Description: 39+ p.

Folder 13.20 ***Experiments with an axial cooling fan blower,*** **by B. Eckert, (Volume 21 of a series of articles on compressor and fan design, written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 106 p.

Folder 13.21 ***Cooling fan for Daimler Benz 632-Aircraft engine,*** **by B. Eckert, (Volume 18 of a series of articles on compressor and fan design, written by German engineers), May 1946, U.S. Navy Department, Washington, D.C.,**

Physical Description: 19 p.

FANS AND BLOWERS

Box Box 3, Folder 14.1 **[Folder containing material relating to superchargers.]**

a) Letter from Elliott Company (C.F. Harms) to M.P. O'Brien re Elliott-Buchi Turbochargers (Sept.14, 1943).
b) *Commercial transport pressure cabin aircraft,* by Nathan C. Price, Presented at the University of California, Berkeley, April 2, 1941.

Physical Description: 29 p.

c) *Report on a comparison of high altitude supercharging methods as related to engine performance,* by Kenneth Campbell and John E. Talbert, Wright Aeronautical Corporation, Paterson, N.J., Jan.17, 1938.

Physical Description: 45 l.

d) *Operating principles and lubrication system of the Wright two-speed supercharger,* by Allan Chilton and Paul A. Young, Wright Aeronautical Corporation, [Paterson, N.J.], 1939.

Physical Description: 26 p.

e) *The comparative performance of Roots type aircraft engine superchargers as affected by change in impeller speed and displacement,* by Marsden Ware and Ernest E. Wilson, reprint of Report no. 284 (April 1928), National Advisory Committee for Aeronautics, Washington, D.C., GPO, 1929.

Physical Description: 14 p.

f) [Handwritten notes (R.G. Folsom, M.P. O'Brien), re N.C. Price Supercharger; ref. Royal Aero. Soc. Jour., Oct.1940.]

Folder 14.2 ***Contributions a l'etude experimentale du decollement tournant dans les compreseurs axiaux,* par Andre Jaumotte et Simon Goldstein, Universite Libre de Bruxelles, Institut de Mecanique appliquee, Fev.1957,**

Physical Description: 4 p.

Folder 14.3 **a) *Determination de la vitesse de rotation du decollement tournant brusque des rotors axiaus,* par Andre Jaumotte, extrait des *Comptes rendus des seances de l'Academie des Sciences,* t.245, p.631-634, seance du 5 aout 1957.**
b) *Influence du nombre de reynolds sur les pertes dans les grilles d'aubes,* par Andre L. Jaumotte et Pierre Devienne, [1957].

Folder 14.4 ***Air flow in fan-discharge ducts,* by Lionel S. Marks, *Transactions of A.S.M.E.,* 1934, pp.871-878. (PTC-56-2).**

Folder 14.5 ***Supercharging of internal-combustion engines with blowers driven by exhaust-gas turbines; discussion, Transactions of A.S.M.E,* Feb.1937, pp.430-438. (OGP-59-2).**

Folder 14.6 ***Inlet-air-temperature correction in a Roots supercharger,* by F.A. Hiersch, *Transactions* of A.S.M.E., Aug.1943, pp.697-700.**

Folder 14.7 ***Investigation of blade characteristics; performance and efficiency of turbine and axial-flow compressor stages,* by J.R. Weske, *Transactions of A.S.M.E.,* July 1944, Vol.66, No.5. pp.413-420.**

Folder 14.8 ***Superchargers for aircraft engines,* by R.G. Standerwick and W.J. King, *Transactions of A.S.M.E.,* Jan.1944, pp.61-71.**

Folder 14.9 ***Fundamentals of the Elliott-Lysholm compressor,* by W.A. Wilson and J.W. Crocker, *Mechanical Engineering,* June 1946. pp.514-518.**

Folder 14.11 ***Analytical design of centrifugal air compressors,* by C. Concordia and M.F. Dowell, *Journal of Applied Mechanics,* Vol.13, No.4, Dec.1946. pp.A-271-A275.**

Folder 14.12 ***Velocity distributions and design data for ideal incompressible flow through cascades of airfoils,* by Robert Resnick and L.J. Green, *Journal of Applied Mechanics,* Aug.1949. (Paper no.50-A-31).**

Folder 14.13 ***Analysis of viscous laminar incompressible flow through axial-flow turbomachines with infinitesimal blade spacing,* by T.P. Torda, H.H. Hilton, and F.C. Hall, *Journal of Applied Mechanics,* Jan.1953. (Paper no.53-APM-28).**

Folder 14.14 ***The unsteady forces due to viscous wakes in turbomachines,* by Nelson H. Kemp and W.R. Sears, reprinted from *Journal of the Aeronautical Sciences,* July 1955, Vol.22, No.7. pp.478-483.**

Folder 14.15 ***Stratos supercharger uses tilting vanes, The Pegasus,* Vol.5, No.6, June 1945, pp.11-13, 16.**

Folder 14.16 ***The analysis and evaluation of compressor performance,*** **by M.C. Stuart and T.E. Jackson, American Society of Mechanical Engineers, New York, N.Y., 1953. 8 p. (Paper no.53-A-53).**

Folder 14.17 ***The dynamics and lubrication of a miniature turbine rotor on porous bushings,*** **by George Sines, The American Society of Mechanical Engineers, N.Y., N.Y., 1953. 14 p. (Paper no.53-SA-36).**

Folder 14.18 ***Three-dimensional interference effects of a finite number of blades in an axial turbomachine,*** **by Howell N. Tyson, Jr., California Institute of Technology, Hydrodynamics Laboratory, Pasadena, Calif., Nov.1952. 20 p. (Report no.E-19.1).**

Folder 14.19 ***Experimental and theoretical investigations of the flow of air through two single-stage compressors,*** **by J.H. Horlock, Great Britain Ministry of Supply, Aeronautical Research Council, 1957. 36 p. (Reports and memoranda no.3031).**

Folder 14.20 ***Some actuator-disc theories for the flow of air through an axial turbo-machine,*** **by J.H. Horlock, Great Britain Ministry of Supply, Aeronautical Research Council, 1958. 31 p. (Reports and memoranda no.3030).**

Folder 14.21 ***The attenuation method for compressible flow systems,*** **by Leonard Michael Greene (originally issued by Grumman Aircraft Engineering Corporation, March 1943 and revised for presentation Jan.1945, Institute of Aeronautical Sciences Meeting).**

Physical Description: 27 l.

Folder 14.22 ***Memoirs of the Faculty of Engineering, University of Nagoya,*** **Vol.1, No.1, April 1949, Nagoya, Japan.**

Physical Description: 107 p.

Folder 14.23 ***Tests of an exhaust fan having a novel blade design,*** **by N.W. Conner and E.P. Cain, *North Carolina State College Record,* Vol.47, No.3, Dec.1947, 48 p. (North Carolina State College, Department of Engineering Research, Bulletin no.36).**

Folder 14.24 ***Design procedures and experimental data for high head rise centrifugal fans,*** **by Gerald B. Gilbert and Ashok Pradhan, The American Society of Mechanical Engineers, N.Y., N.Y., 1969. (For presentation at the ASME Winter Annual Meeting, Nov.16-20, 1969, Los Angeles).**

CENTRIFUGAL AND AXIAL FLOW COMPRESSORS

Box Box 3, Folder 15.1 ***Some theoretical aerodynamic investigations of impellers in radial- and mixed-flow centrifugal compressors,*** **by John D. Stanitz, [n.p., 1951?] 75+ l.**

Folder 15.2 ***Analysis of tip-clearance flow in turbomachines,*** **by Chung Hua Wu and Wen Wu, Polytechnic Institute of Brooklyn, Gas Turbine Laboratory, Department of Mechanical Engineering, July 1954. 48 l. (Technical report no.1).**

Folder 15.3 ***Experimental investigation of tip-clearance flow in cascades,*** **by Wen Wu and Clifford A. Wojan, Polytechnic Institute of Brooklyn, Department of Mechanical Engineering, Gas Turbine Laboratory, Sept.1955. 19+ l. (Technical report no.2).**

Folder 15.4 ***Technique;*** **a journal of instrument engineering, Vol.12, No.2, April 1958.**

Folder 15.5 ***Le decrochage tournant des machines axiales generatrices monoetages. Lois de similitude,*** **par Simon Goldstein et Andre L. Jaumotte, *Journal de Mathematiques et de Physique Appliquees (ZAMP),* Vol.VIII, Fasc.3, 1957. pp.3-19.**

Folder 15.6 ***Principles of the axial-flow compressor,*** **by A.I. Ponomareff, *Westinghouse Engineer,* March 1947, Vol.7, No.2. pp.40-46.**

Folder 15.7 ***See*** **14.9**

Folder 15.8 ***The effect of supercharger capacity on engine and airplane performance,*** **by O.W. Schey and W.D. Gove, National Advisory Committee for Aeronautics, Washington, D.C., 1929. 20 p. (Report no.327).**

Folder 15.9 ***Comparative flight performance with an N.A.C.A. Roots supercharger and a turbocentrifugal supercharger,*** **by Oscar W. Schey and Alfred W. Young, National Advisory Committee for Aeronautics, Washington, D.C., 1930. 14 p. (Report no.355).**

Folder 15.10 ***See*** **14.1(e)**

Folder 15.11 ***Investigations of axial flow compressors,*** **by J.T. Bowen, R.H. Sabersky, and W.D. Rannie, for presentation at the A.S.M.E. Annual Meeting, New York, N.Y., Nov.27-Dec.2, 1949. 24+ p. (Paper no.49-A-102).**

Folder 15.12 ***A collection of compressor test results,*** **by B. Eckert, (Volume 22 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 146 l.

Folder 15.13 ***Axial compressor,*** **by W. Encke, (Volume 24 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 31 p.

Folder 15.14 ***Analysis of the effects of design pressure ratio per stage and off-design efficiency on the operating range of multistage axial-flow compressors,*** **by Melvyn Savage and Willard R. Westphal, National Advisory Committee for Aeronautics, Washington, D.C., Dec.1950. 33 p. (Technical note 2248).**

Folder 15.15 ***Detailed computational procedure for design of cascade blades with prescribed velocity distributions in compressible potential flows,*** **by George R. Costello, Robert L. Cummings, and John T. Sinnette, Jr., National Advisory Committee for Aeronautics, Washington, D.C., Feb.1951. 49 p. (Technical note 2281)**

Folder 15.16 ***A general through-flow theory of fluid flow with subsonic or supersonic velocity in turbomachines of arbitrary hub and casing shapes,*** **by Chung-Hua Wu, National Advisory Committee for Aeronautics, Washington, D.C., March 1951. 40 p. (Technical note 2302).**

Folder 15.17 ***Flow through cascades in tandem,*** **by William E. Spraglin, National Advisory Committee for Aeronautics, Washington, D.C., June 1951. 44 p. (Technical note 2393).**

Folder 15.18 ***Axisymmetric supersonic flow in rotating impellers,*** **by Arthur W. Goldstein, National Advisory Committee for Aeronautics, Washington, D.C., June 1951. 36 p. (Technical note 2388).**

Folder 15.19 ***Possible application of blade boundary-layer control to improvement of design and off-design performance of axial-flow turbomachines,*** **by John T. Sinette, Jr., and George R. Costello, National Advisory Committee for Aeronautics, Washington, D.C., May 1951. 32 p. (Technical note 2371).**

Folder 15.20 ***Comparison of low-speed rotor and cascade performance for medium-camber NACA 65- (C10A10) 10 compressor-blade sections over a wide range of rotor blade-setting angles at solidities of 1.0 and 0.5,*** **by George C. Ashby, Jr., National Advisory Committee for Aeronautics, Washington, D.C., Dec.1954. 40 p. (Research memorandum L54I13).**

BLOWERS AND COMPRESSORS

Box Box 3, Folder 16.1 ***Experimental investigation of an axial-flow compressor inlet stage operating at transonic relative inlet mach numbers, III - Blade-row performance of stage with transonic rotor and subsonic stator at corrected tip speeds of 800 and 1000 feet per second,*** **by Francis C. Schwenk, Seymour Lieblein and George W. Lewis, Jr., National Advisory Committee for Aeronautics, Washington, D.C., Sept.1953. 69 p. (Research memorandum E53G17).**

Folder 16.2 ***Method of analysis for compressible flow through mixed-flow centrifugal impellers or arbitrary design,*** **by Joseph T. Hamrick, Ambrose Ginsburg and Walter M. Osborn, National Advisory Committee for Aeronautics, Aug.1950. 29 p. (Technical note 2165).**

Folder 16.3 ***Theoretical turbojet thrust augmentation by evaporation of water during compression as determined by use of a Mollier diagram,*** **by Arthur M. Trout, National Advisory Committee for Aeronautics, Washington, D.C., June 1950. 41 p. (Technical note 2104).**

Folder 16.4 ***Theoretical effect of inlet hub-tip-radius ratio and design specific mass flow on design performance of axial-flow compressors,*** **by Chung-Hua Wu, John T. Sinnette, Jr., and Robert E. Forrette, National Advisory Committee for Aeronautics, Washington, D.C., April 1950. 33 p. (Technical note 2068).**

Folder 16.5 ***An analysis of flow in rotating passage of large radial-inlet centrifugal compressor at tip speed of 700 feet per second,*** **by Vasily D. Prian and Donald J. Michel, National Advisory Committee for Aeronautics, Washington, D.C., Dec.1951. 46 p. (Technical note 2584).**

Folder 16.6 ***A general theory of three-dimonsional flow in subsonic and supersonic turbomachines of axial-, radial-, and mixed-flow types,*** **by Chung-Hua Wu, National Advisory Committee for Aeronautics, Washington, D.C., Jan.1952. 93 p. (Technical note 2604).**

Folder 16.7 ***Two-dimensional compressible flow in centrifugal compressors with straight blades,*** **by John D. Stanitz and Gaylord O. Ellis, National Advisory Committee for Aeronautics, Washington, D.C., Aug.1949. 76 p. (Technical note 1932).**

Folder 16.8 ***Experimental and theoretical distribution of flow produced by inlet guide vanes of an axial-flow compressor,*** **by Harold B. Finger, Harold J. Schum, and Howard A. Buckner, Jr., National Advisory Committee for Aeronautics, Washington, D.C., Oct.1949. 40 p. (Technical note 1954).**

Folder 16.9 ***One-dimensional compressible flow in vaneless diffusers of radial- and mixed-flow centrifugal compressors, including effects of friction, heat transfer and area change,*** **by John D. Stanitz, National Advisory Committee for Aeronautics, Washington, D.C., Jan.1952. 61 p. (Technical note 2610).**

Folder 16.10 ***Potential flow through radial flow turbomachine rotors,*** **by A.J. Acosta, California Institute of Technology, Hydrodynamics Laboratory, Pasadena, Feb.1954. 48 l. (Report no.E-19.4).**

Folder 16.11 ***An electrical dynamometer for the direct measurement of mechanical power, torque and rpm for very high shaft speeds - (A description of the amplifying system and controls is given in Volume 25 of this series),*** **by B. Eckert (Volume 1 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 20 p.

Folder 16.12 ***A temperature measuring device for the exact determination of the internal adiabatic efficiency of a compressor [in 2 parts],*** **by B. Eckert, (Volume 2 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 95 p.

Folder 16.13 ***Manufacturing and strength considerations of axial compressors,*** **(Part A, by B. Eckert and S. Mlaker; Part B, by E. Moeck and M. Schilhansl), (Volume 4 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, June 1946. 63 p. (NavShips 250-338-1).**

Folder 16.14 ***Review of research on gas turbines carried out at D.V.L., Garmisch,*** **(Part a, by H. Kuhl; Part B, by Fritz A.F. Schmidt), (Volume 7 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., June 1946. 78 p. (NAVSHIPS 250-338).**

Folder 16.15 **"Positive displacement rotary compressors (Roots & Lysholm types)," (Part A, by B. Eckert and F. Weining; Part B, by B. Eckert and P.H. Heim), (Volume 14 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., April 1946.**

Physical Description: 97 p.

Folder 16.17 ***Supercharger for aviation engine, FKFS 9-9000VI (D Engine),*** **by B. Eckert [in 3 parts], (Volume 16 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 178 p.

Folder 16.18 ***Superchargers for automotive engines,*** **by B. Eckert, (Volume 17 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 106 p.

Folder 16.18 ***'Matching' of compressor stages and compressors for good part load operation,*** **(Part A by H. Hagen; Part B by Senger), (Volume 8 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 32 p.

Folder 16.19 ***Information on unconventional compressors,*** **(Part A by A. Weise; Part B by B. Eckert; Part C by Pabst von Ohain), (Volume 9 of a series of articles on compressor and fan design by German Engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 68 p.

Folder 16.20 ***Characteristic numbers for flow machines based on the Newtonian theory of dynamic similarity,*** **by B. Eckert, (Volume 10 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 49 p.

Folder 16.21 ***The design of 50% reaction compressors and results of tests of individual stages,*** **(Part A by B. Eckert and F. Weinig; Part B by B. Eckert; Part C, by B. Eckert and W. Kobel), (Volume 11 of a series of articles on compressor and fan design written by German engineers), U.S. Navy Department, Washington, D.C., May 1946.**

Physical Description: 98 p.

Folder 16.22 ***Evaluation of a high hub/tip ratio centrifugal compressor,*** **by F.G. Groh, et al, American Society of Mechanical Engineers, Dec.1969. 10 p. (Paper no. 69-WA/FE-28).**

CENTRIFUGAL PUMPS WITH VISCOUS FLUID

Box Box 4, Folder 17.1 ***The influence of viscosity on centrifugal pump performance,*** **by Arthur T. Ippen, for presentation at the Annual Meeting of the American Society of Mechanical Engineers, N.Y., N.Y., Nov.27, 1945. 18 p. (Paperno.A-45-57).**

Folder 17.2 **a) *References: centrifugal pumps with viscous fluids,* by A. Elvitsky for ME 271, Spring 1953.**

Physical Description: 3 p. [3 c.]

b) *References for performance of centrifugal pumps with viscous fluids,* by R.G. Folsom, Oct.10, 1940.

Physical Description: 1 p. (typescript).

Folder 17.3 ***Some problems in the selection and operation of centrifugal pumps for oil and gasoline pipe lines,*** **by A. Hollander, [n.p., 1941].**

Physical Description: 25 l.

Folder 17.4 ***General considerations of a proposed investigation of the influence of viscosity on centrifugal pump performance,*** **by Anatole W. Elvitsky, [n.p., April 15, 1953].**

Physical Description: 3 p. (typescript)

Folder 17.5 **"A preliminary report on an investigation of the effects of viscosity on the characteristics of a centrifugal pump, by Horace E. Burrier, for M.E. 219, Dec.2, 1938**

Physical Description: 1 v. (typescript and handwritten notes).

Folder 17.6 ***Characteristics of centrifugal pumps with viscous fluids,*** **by R.G. Folsom, Aug.1938. 4 p. [Folder also includes notes and miscellaneous correspondence re course work on centrifugal pumps and viscous fluids.]**

Folder 17.7 ***Viscosity of oils at high temperatures,*** **by F.L. Maker, for presentation at the Pacific Coast Applied Mechanics Meeting of the A.S.M.E., Pasadena, Calif., Jan.20-21, 1933.**

Physical Description: 11+ l. (typescript).

Folder 17.8 ***Sier-Bath screw pumps*****, Sier-Bath Gear and Pump Co., Inc., North Bergen, N.J., 1948. 17 p. (Bulletin S-3).**

Folder 17.9 **[Miscellaneous material: Victor Kimball-Krogh sand and tailings pumps Bulletin 311; drawings of Kimball Krogh No.6 Dredge pump. 1938]**

Physical Description: 1 folder.

Folder 17.10 **[Discussion of Habach paper; correspondence between R.G. Folsom and A. Hollander (Byron-Jackson, 1942) re Meek's thesis on viscosity. 1943]**

Physical Description: 1 folder.

Folder 17.11 ***Disk friction - turbulent flow,*** **by Anatole W. Elvitsky, [n.p.] April 7, 1953.**

Physical Description: 9 1. (handwritten).

Folder 17.12 **[Various papers on centrifugal pump characteristics and performance, fluid mechanics laboratories, 1927-1938, compiled by University of California, Department of Mechanical Engineering for Experiment HE-68.]**

Physical Description: 1 folder.

Folder 17.13 **[Two blueprints showing pump curves, U.C. Berkeley data, n.d.]**

Physical Description: 1 folder.

JET PUMPS

Box Box 4, Folder 18.1	***A simple air ejector,*** **by J.H. Keenan and E.P. Neumann, *Journal of Applied Mechanics,* June 1942, Vol.9, No.2, pp.75-84.**
Folder 18.2	***The theory of ejectors,*** **by H.G. Elrod, *Journal of Applied Mechanics,* Vol.12, No.3, Spet.1945, pp.170-174.**
Folder 18.3	***Transport of mementum, mass and heat in turbulent jets,*** **by Lloyd G. Alexander, Thomas Baron, and Edward W. Comings, University of Illinois, Engineering Experiment Station, Urbana. 88 p. (University of Illinois Bulletin, Vol. 50, No. 66, May 1953, and Engineering Experiment Station Bulletin series no.413).**
Folder 18.4	***Installation of a centrifugal-jet pump,*** **by J.F. Northrop and R. Rhoda, for M.E.199, University of California, Departments of Electrical and Mechanical Engineering, 1943.** **Physical Description:** 1 folder (various pagings).
Folder 18.5	**[Folder containing material relating to jet pumps, by Donald J. Rammage, for M.E. 131B, University of California, Department of Mechanical Engineering, Jan.-March 1932.]**
Folder 18.6	**[Original curves and drawings, by L.A. Ledgett, regarding jet pumps, M-805, for M.E. 131B, University of California, Department of Mechanical Engineering, Jan.1933.]** **Physical Description:** 1 envelope.
Folder 18.7	**[Telephone message from George Ashbook Company re successful pump test, July 23, 1948.]** **Physical Description:** In 1 folder.
Folder 18.8	***Report on the capacity test on the 4*** **S.&J. exhauster," by Louis Bosa [1937].** **Physical Description:** 1 folder (various pagings).
Folder 18.9	***Second series of tests on the 4*** **S&J exhauster and comparative tests with the 4" dockyard gas-devourer," [by Louis Bosa], Oct.1937.** **Physical Description:** 7 l. (typescript).
Folder 18.10	**[Jet pump design for Permanente Metals Corporation - natural gas pumping natural gas, 1943. Includes correspondence from R.G. Folsom to the Permanente Metals Corporation dated May 17, 1943.]**
Folder 18.11	**[Folder containing information on theory pertaining to the jet pump and hydraulic impact - abstracts. 1928.]** **Physical Description:** (typescript and handwritten).

JET PUMPS, CHAPTER 7

Box Box 4, Folder 19.1 **a) *The water jet pump,* by James E. Golsine and Morrough P. O'Brien, *University of California Publications in Engineering,* Vol.3, No.3, 1934. pp.167-190.**
b) *The water jet pump* [office copy].

Physical Description: 52 l. (typescript)

Folder 19.2 ***Characteristic curves for the water jet pump*, by R.G. Folsom (rough draft), [n.p.] May 16, 1945.**

Physical Description: 4 l. (typescript).

Folder 19.3 **[Blueprints, figures for Chapter VII.]**

Physical Description: 1 folder.

Folder 19.4 **[Test data for Ledgett paper, 1934.]**

Physical Description: 1 folder (handwritten).

Folder 19.5 **[Folder containing: H.W. Tversen notes on steam jets or gas jets; *Effect of molecular weight of entrained fluid on the performance of steam-jet ejectors,* by W.C. Holton, ASME Paper no.50-A-114, 1951.**

Physical Description: 5 p. (2 c.)].

Folder 19.6 **[Folder containing mimeographed information on jet pump performance for area ratio (An/Ad) of.0925 with fixed diffuser restriction, North American Aviation, Los Angeles, Aug. 16, 1948. (NA-48-904).]**

Folder 19.7 ***Discussion of 'The Horizontal Carriage of Granular Material by an Injector-Driven Air Stream',* by S.A. Wood and A. Bailey, University of California, Berkeley, College of Engineering, Department of Mechanical Engineering, 1939. 7 l. (typescript). [Folder includes *The horizontal carriage of granular...*]**

Folder 19.9 ***Jet pump as compressor,* [mimeographed table, n.d.]**

Physical Description: 1 page.

Folder 19.10 ***Report on steam jet pumps (M-805-B),* by Carl Edward Watson, for M.E. 131B, University of California, Department of Mechanical Engineering, Feb. 1933.**

Physical Description: 1 v. (unpaged) (handwritten).

Folder 19.11 ***General theory of air and water jet pumps, Experiment M-805,* [n.p. Jan. 1933].**

Physical Description: 1 folder (mimeographed).

Folder 19.12 ***Injector performance estimate for combination with compressor with recirculation,* by Allan W. McCoy, [memorandum] Brown University, Engineering Division, April 27, 1949.**

Physical Description: 9 l. (typescript).

Folder 19.13 ***See* 18.9**

JET PUMP DESIGNS AND TESTS, CHAPTER VII

Box Box 4, Folder 20.1 ***Untersuchungen an Wasserstrahl-Luftpumpen mit einem enzigen kreiszylindrischen Treibstrahl,*** **by Gerhard v. Pawel-Rammingen, Triltsch & Huther, Berlin, 1936. 34 p. (Dissertation, Technischen Hochschule Carolo-Wilhelmina zu Braunschweig).**

Folder 20.2 ***Saggio di Teoria dell'Iniettore Idraulico,*** **by Duilio Citrini, Societa Editrice Riviste Industrie Elettriche, Milano, 1948. 19 p. (Memorie e Studi dell'Istituto di Idraulica e Construzioni Idrauliche del Politecnico di Milano No.72).**

Folder 20.3 ***The jet and its industrial application,*** **Schutte & Koerting Company, Philadelphia, Pa., 1946. 35 p. (Bulletin J-1).**

Folder 20.4 **[Calculations for Comstock Mine jet pump, n.p., n.d.]**

Physical Description: 1 folder. (handwritten).

Folder 20.5 **[Correspondence and notes in re Joshua Hendy design for oil wells, 1933.]**

Physical Description: 1 folder (handwritten and typescript).

Folder 20.6 **[Blueprints for Pelton Water Wheel Company on jet pumps, 1928.]**

Physical Description: 1 folder.

Folder 20.7 **[Folder containing material on jet pumps including: *Water jet eductors for lifting liquids,* Schutte & Koerting Company, Vol.1, Bulletin no.2-M, April 1928; correspondence; blueprints; handwritten notes.]**

Folder 20.8 **[Miscellaneous material on jet pumps including: "Report on calculations of the jet pump; correspondence, M.P. O'Brien; handwritten notes. 1930].**

Physical Description: 1 folder.

Folder 20.9 **[Handwritten notes on the hydraulic jet pump taken from H.H. Bliss thesis. n.d.]**

Physical Description: 1 folder.

Folder 20.10 **[Folder containing S&K jet catalog and special booklet on jets giving further information on steam, water, and air jets. 1947.]**

Folder 20.11 **[Blueprints, Byron-Jackson jet pump design, 1933.]**

Physical Description: 1 folder.

Folder 20.12 ***Performance of a modified jet pump,*** **by D.E. Batchman and N.D. Morgan, for ME 131B, April-May, 1957.**

Physical Description: 57 p.

Folder 20.13 ***What's ahead for jet engines and rocket motors in process units?*****, reprinted from *Chemical Engineering,* Sept. 1953. pp.208-211.**

Folder 20.14 ***Educators for hydraulic systems applied to closed-circuit lubrication systems,*** **by A.W. Hussmann, Wright Air Development Center, Ohio, Sept. 1952. 96 p. (WADC Technical report 53-131).**

Folder 20.15 ***Mixing of fluid streams,*** **by Lowel A. Ledgett, reprinted paper from Aeronautic and Hydraulic Divisions, American Society of Mechanical Engineers, Summer Meeting, June 19, 20, 21, 1934.**

Physical Description: 8 p.

Folder 20.17 ***An experimental investigation of several low-area-ratio water jet pumps,*** **by N.L. Sanger, *Transactions of the A.S.M.E.,* 1969. 9 p. (Paper no.69-FE-5).**

GLASS JET PUMP AND CENTRIFUGAL JET PUMP SYSTEM

Box Box 4, Folder 21.1 ***Mixing of two fluid streams,*** **by J. Vidmar and E. Chiesa, for M.E. 131, University of California, May 28, 1943.**

Physical Description: 28 p.

Folder 21.2 ***Log book - test of a centrifugal-jet pump,*** **by R.A. Rhoda, 1939.**

Physical Description: 1 v.

Folder 21.3 ***Jet centrifugal pump performance,*** **by T.A. Ehrisman and W.F. Eaton, for M.E. 131 Special Report, University of California, May 1943.**

Physical Description: 1 folder (various pagings).

Folder 21.4 ***Log book - centrifugal-jet pump,*** **by W.F. Eaton for M.E.131, University of California, May 1943.**

Physical Description: 29 p.

Folder 21.5 ***The jet pump*****, by J.F. Bishop and C.D. Carroll, for M.E. 131B, University of California, April-June 1945.**

Physical Description: 35 p.

Folder 21.6 ***Water-jet air pump,*** **by Uriel Yarden, for M.E. 131B, University of California, June 1945.**

Physical Description: 30 p.

JET PUMPS COMPRESSIBLE

Box Box 4, Folder 21.7 **[Miscellaneous notes on jet pumps. n.d.]**

Physical Description: 1 folder (handwritten).

Folder 21.8 ***Annular-jet ejectors,* by Elliott G. Reid, National Advisory Committee for Aeronautics, Washington, D.C., Nov. 1949.**

Physical Description: 98 p.

Folder 21.9 ***Some two-dimensional aspects of the ejector problem,* by J.A. Goff and C.H. Coogan, *Journal of Applied Mechanics,* Vol.9, No.4, Dec. 1942. pp.151-154.**

Folder 21.10 ***Jet propulsion and rockets for assisted take-off,* by M.J. Zucrow, *Transactions of the A.S.M.E,* Vol.68, No.3, April 1946. pp.177-188.**

Folder 21.11 ***Test of a jet pump,* by Leland Rella Balch, University of Wisconsin, 1913. 15 p. (Bulletin of the University of Wisconsin No.596, and Engineering Series, Vol.7, No.4, pp.305-320).**

Folder 21.12 ***The thrust and drag penalties on a jet engine installation due to cooling flow,* by Harold Klein, Douglas Aircraft Company, Inc., Santa Monica, Calif., Nov. 1950. 14 l. (Report no. SM-13862).**

Folder 21.13 ***Analytical solutions for gross thrust change and weight flow ratio due to a jet ejector pump,* by N.L. Fox, Douglas Aircraft Company, Inc., Santa Monica, Calif., Dec. 1950. 27 l. (Report No.SM-13881).**

Folder 21.14 ***Power test codes - test code for ejectors and boosters,* by Philip Freneau and George P. Clement, ASME, New York, May 1954. 40 l. (PTC 24-1954).**

Folder 21.15 ***Water jet eductors,* Schutte and Koerting Company, Philadelphia, Pa., Dec. 1949. 34 p. (Bulletin 2M).**

Folder 21.16 ***Steam jet syphons,* Schutte and Koerting Company, Philadelphia, Pa., June 1950. 23 p. (Bulletin 2A).**

Folder 21.17 ***Steam-jet ejectors,* Ingersoll-Rand, New York, n.d.**

Physical Description: 27 p.

Folder 21.18 ***Contributions to jet pump theory, I. Comparison of ideal mixing processes,* by H.B. Helmbold, University of Wichita, School of Engineering, Wichita, June 1953. 13 l. (Engineering study no.105).**

Folder 21.19 ***Contributions to jet pump theory, II. Integral relations on mixing processes,* by H.B. Helmbold, University of Wichita, School of Engineering, Wichita, June 1953. 10 l. (Engineering study no.106).**

Folder 21.20 ***Contributions to jet pump theory, III. Simplified theory of mixingzone spreading,* by H.B. Helmbold, University of Wichita, School of Engineering, Wichita, July 1953. 17 l. (Engineering study no.107).**

Folder 21.21 ***Contributions to jet pump theory, IV. Approximate theory of jet diffusion in a constant-pressure mixing tube,* by H.B. Helmbold, University of Wichita, School of Engineering, Wichita, Nov.1953. 25 l. (Engineering study no.118).**

Folder 21.22 ***Review of a systematic, theoretical investigation of jet pumps,* by H.B. Helmbold, University of Wichita, School of Engineering, Wichita, Nov.1953. 13 p. (Engineering study no.122).**

Folder 21.23 ***Factor C in the performance of ejectors (as a function of molecular weights of vapors),* by Lincoln T. Work and Adolph Miller, reprinted from *Industrial and Engineering Chemistry,* Vol.32, Sept.1940. p.1241-1243.**

Folder 21.24 ***Experimental studies of noise from subsonic jets in still air,* by Leslie W. Lassiter and Harvey H. Hubbard, National Advisory Committee for Aeronautics, Washington, D.C., Aug.1952. 35 p. (Technical note 2757).**

Box Box 5, Folder 21.25 ***On steady, laminar, round jets in compressible viscous gases far behind the mouth,* by M.Z. Krzywoblocki, *Osterreichisches Ingenieur-Archiv,* Bd.III, Heft, 4, 1949. pp.373-383.**

Folder 21.26 ***See* 21.13**

Folder 21.27 ***See* 21.12**

Folder 21.28 ***Model investigation of mixing streams of air with combustion gases as applied in secondary mixing in gas turbines,* by A.K. Oppenheim, Stanford University, Department of Mechanical Engineering, Nov.1949.**

Physical Description: 4 p.

Folder 21.29 ***Transport of momentum, mass, and heat in turbulent jets; summary technical report Part i,* by Lloyd G. Alexander, Thomas Baron and Edward W. Comings, University of Illinois, Engineering Experiment Station, Urbana, Sept.1950. 143 p. (Technical report no.8).**

Folder 21.30 ***Trends in design of fractionating pumps,* by Kenneth C.D. Hickman, reprinted from *Journal of Applied Physics,* Vol.11, No.5, May 1940. pp.303-313.**

Folder 21.31 ***A contribution to the development of jet pumps,*** **by Wagner, July 1944. Translation by Central Air Documents Office, Navy-Air Force, March 1949. 21 p. (Translation ATI no.20255).**

Folder 21.32 ***Air ejector studies,*** **by Albert E. Kipps and Leo Lichtman for M.E. 131B, University of California, June 1952.**

Physical Description: 67 p. (handwritten).

Folder 21.33 ***Water-air jet pump experiment; special project,*** **by K.E. Barnhart, Jr. and A.L. Hale, for M.E. 131B, University of California, June 1947.**

Physical Description: 1 v. (unpaged) (typescript).

Folder 21.34 ***Studies on liquid-jet gas pumps,*** **by Yoichi Takashima,** ***Journal of the Scientific Research Institute,*** **Tokyo, Vol.46, No.1295, Dec.1952.**

Physical Description: 17 p.

Folder 21.35 ***The possible use of turbojet units in the evacuation of a large air filled tank,*** **by R.A. Cornog, Propulsion Research, Inglewood, Calif., July 1951.**

Physical Description: 15 l.

Folder 21.36 ***Jet pump cavitation,*** **by R.G. Cunningham, A.G. Hansen, and T.Y. Na,** ***Transactions of the ASME,*** **Dec.1969. 10 p. (Paper no. 69-WA/FE-29).**

GAS LIFT, CHAPTER VIII

Box Box 5, Folder 22.1 **[Bibliography - air lift pumps.**

Physical Description: 12 p. (handwritten).]

Folder 22.2 ***The range of application of gas-lift methods,* by E.C. Babson, preprint for presentation at 20th Annual Meeting of American Petroleum Institute, Chicago, Ill., Nov.17, 1939.**

Physical Description: 28 p.

Folder 22.9 **[Literature on air lift pump system, Sullivan; Ingersoll-Rand. 1921.]**

Physical Description: 1 folder.

Folder 22.10 ***A review of developments in gas lift and pumping,* by Hallan N. Marsh, for presentation at the World Petroleum Congress, Imperial College of Science and Technology, South Kensington, London, July 19-25, 1933. 10 p. (Preprint no.40).**

Folder 22.12 ***The air lift system, pumping by compressed air,* Ingersoll-Rand Company, New York, June 1925.**

Physical Description: 37 p.

Folder 22.13 ***The air lift,* by Ingersoll-Rand Company, New York [n.d.].**

Physical Description: 20 p.

Folder 22.14 ***Proposed correlation of data for isothermal two-phase, two-component flow in pipes,* by R.W. Lockhart and R.C. Martinelli, reprinted from *Chemical Engineering Progress,* Vol.45, No.1, Jan.1949. pp.39-48.**

Folder 22.15 ***Hydraulic Laboratory air lift pump,* abstract from *Technische Hydromechanik,* by H. Lorenz [n.d.].**

Physical Description: 1 folder (handwritten and typescript).

Folder 22.16 ***An investigation of the air lift pump,* by Geo. Jacob Davis, Jr., and Carl Robert Weidner, *Bulletin of the University of Wisconsin,* No.667, Engineering Series, Vol.6, No.7, July 1914. pp.405-573.**

Folder 22.18 ***Sullivan air lift pumping systems; methods and apparatus,* by Sullivan Machinery Company, Chicago, June 1924. 47 p. (Bulletin 71-H).**

Folder 22.19 ***An investigation of the flow of mixtures of water and air in vertical columns,* by Sylvan Cromer, unpublished thesis for the Master of Science in Engineering, University of Oklahoma, Norman, Okla., 1937.**

Physical Description: 20+ p.

Folder 23.1 ***Air and gas lifts,* by Ralph Verander Higgins, unpublished dissertation for Master of Science in Mechanical Engineering, University of California, 1943.**

Physical Description: 105 l. (typescript).

Folder 23.2 ***The gas lift,* by Herman Ellis Miller, unpublished theses for the Master of Science in Mechanical Engineering, University of California, Berkeley, 1942.**

Physical Description: 100 l. (typescript).

Folder 23.4 ***The gas lift - optional experiment, M-4440,* by Marshall Paxton and Fred Preston, University of California, Feb.18, 1944.**

Physical Description: 80 l. (typescript).

Folder 23.5 ***A report on tests of the air lift pump,* by E.P. Schmitt, for M.E. 199, University of California, April 12, 1929.**

Physical Description: 106 p.

Folder 23.6 ***Density pumps,* by M.P. O'Brien and R.G. Folsom, Chapter VIII, for M.E. 127, Spring 1940, University of California, Berkeley, Dec.1939.**

Physical Description: 20 l. (typescript).

AIR LIFT

Box Box 5, Folder 24.1 **[Material on air lifts including: *Air-lift pump,* Experiment H-56, 1940; *Air lift pump,* Experiment H-11, October 1930; *The air lift system,* Ingersoll-Rand Company, June 1925; *The Sullivan Air lift pumping system: methods and apparatus,* March 1920 and June 1924; *Gardner air lift pumping: some observations on principles involved in flowing oil wells,* by S.F. Shaw, 1929.]**

Physical Description: 1 folder.

Folder 24.2 ***The air-water lift pump,* by Robert F. Carlson, for M.E. 131, University of California. Department of Mechanical Engineering, Oct.15, 1943.**

Physical Description: 1 folder (unpaged) (handwritten).

Folder 24.3 ***Water-air lift pump; combined report,* by R.F. Carlson and A.S. Grundy, for M.E. 131, University of California, Department of Mechanical Engineering, Oct.1943.**

Physical Description: 1 folder (handwritten and typescript).

Folder 24.4 ***The air lift pump,* by J.F. Northrop and R.L. Wiegel, for M.E. 131, University of California, Oct.1943.**

Physical Description: 1 folder (various pagings) (handwritten notes, typescript).

Folder 24.5 ***Air lift pump,* Experiment H-ll, for M.E. 119-A, University of California, Hydraulics Laboratory Oct.1930.**

Physical Description: 6 p.

SURGES

Box Box 5, Folder 25.1 **[Folder containing material re water hammer, including: *Bibliography, water hammer* ; Chapter 9, "Hydraulic dam, pp.9.1 and 9.2, 9.19A, B, C; miscellaneous charts, graphs, and figures on hydraulic constants, 1939; Folsom notes on water hammer, 1947.]**

Folder 25.2 ***Preliminary notes on the phenomenon of surge as observed in open type irrigation pipe distribution systems,* by E.H. Taylor and A.F. Pillsbury, University of California, Los Angeles, Department of Irrigation & Soils, Dec.1952.**

Physical Description: 23 p.

Folder 25.3 ***Pelton surge suppressor,* by F.H. Rued, The Pelton Water Wheel Co., San Francisco, [n.d.]**

Physical Description: 2 p.

Folder 25.4 ***Pelton surge suppressors - for safeguarding waterworks flow lines against damage from sudden changes in pressure,* The Pelton Water Wheel Company, 1948. 7 p. (Bulletin no.41).**

Folder 25.5 ***Investigation of surge phenomena by means of model experiments,* by W.F. Durand, *Western Engineering,* Dec.1913.**

Physical Description: 11 p.

Folder 25.6 **"Das Wasserschloss bei Hochdruckspeicheranlagen unter besonderer Ber¸ucksightigung des Kammerwasserschlosses mit Uberfall," by Otto Streck, Berlin, 1929.**

Physical Description: 67 p.

Folder 25.7 ***Etude theorique et experimentale sur les coups de belier dans les conduites forcees; rapports,* de E. Jouguet, A. Rateau, et de Sparre, Paris, H. Dunod & E. Pinat, Editeurs, Paris, 1917.**

Physical Description: 131 p.

Folder 25.8 ***Oscillations in closed surge tanks,* by A.M. Binnie, in *Journal of Applied Mechanics,* Vol.10, No.4, Dec.1943. pp.183-186.**

Folder 25.9 ***Conditions for the stability of surge chambers,* by Fredrik Jonson, translated by SERA, University of California, Berkeley, Department of Mechanical Engineering, March 24, 1928.**

Physical Description: 9 l. (typescript).(Translation no.31).

WATER HAMMER

Box Box 5, Folder 26.1 ***Comparison and limitations of various water hammer theories,*** **by Ray S. Quick, preprinted from *Mechanical Engineering,* 1927.**

Physical Description: 7 p.

Folder 26.2 ***Theory of water-hammer,*** **by Lorenzo Allievi, translated by Eugene E. Halmos, Typography Riccardo Garroni, Rome, 1925.**

Physical Description: 117 p.

Folder 26.3 ***Etude des variations de regime dans les conduites d'eau,*** **by L. Bergeron, *Revue Generale de l'Hydraulique,* Paris, 1935.**

Folder 26.4 ***Graphical analysis of transient phenomena in linear flow,*** **by Kalman J. DeJuhasz, *J.F.I.,* June 1937. pp.463-778.**

Folder 26.5 **Proceedings, 1951, Vol.165 of the Institution of Mechanical Engineers, Hydraulics Group, [including]: *Water hammer in a pumping main and its prevention,* by A.M. Binnie and D.G. Thackrah; *The automatic hydraulic ram,* by J. Krol; *New formulae for water flow in pipes,* by J.S. Blair; *Friction losses in turbulent pipe-flow,* by L.E. Prosser, R.C. Worster, and S.T. Bonnington.**

Physical Description: 111 p.

Folder 26.6 ***Some experiments and calculations on the resurge phase of water hammer,*** **by Joseph N. LeConte, reprinted paper from Aeronautic and Hydraulic Divisions, American Society of Mechanical Engineers, Summer Meeting, June 19-21, 1934.**

Physical Description: 10 l.

Folder 26.7 **[Notes on water hammer-linetic energy in pipe flow, by J.N. Nikuradse, 1934.]**

Physical Description: 1 folder (handwritten).

Folder 26.8 ***Water hammer control,*** **by S. Logan Kerr, in *Journal of A.W.W.A.,* Vol.43, No.12, Dec.1951. pp.985-999.**

Folder 26.9 ***Pump discharge valves on the Colorado River Aqueduct,*** **by R.M. Peabody, in *Transactions of A.S.M.E.,* Sept.1939.**

Physical Description: 9 p.

Folder 26.10 ***Comparisons between calculated and test results on water hammer in pumping plants,*** **by O. Schnyder, reprinted from *Transactions A.S.M.E,* November 1937. pp.695-700.**

Folder 26.11 **a) *Water-hammer pressures in compound and branched pipes,* by Robert W. Angus, American Society of Civil Engineers *Papers,* Jan.1938. pp.133-169.**
b) *Kreitner's diagram for water-hammer problems,* by Robert W. Angus, *Mechanical Engineering* (1935?). pp.781-782.

Folder 26.12 ***New aspects of maximum pressure rise in closed conduits,*** **by S. Logan Kerr, *Transactions of A.S.M.E,* 1928. pp.13-30. (HYD-51-3).**

Folder 26.13 ***Reduction of shock pressure in solvent delivery lines,*** **by Howard S. Gardner and John H. Folwell, reprinted from *Industrial and Engineering Chemistry,* Vol.31, April 1939. pp.446-451.**

Folder 26.14 ***Water hammer-cause, effect and control in piping systems,*** **by J.A. Hager, reprinted from *Industrial Power,* The Williams Gauge Company, Pittsburgh, Pa., April 1936. pp.35-38.**

Folder 26.15 ***The application of Heaviside's operational calculus to the solution of problems in water hammer,*** **by F.M. Wood, in *Transactions of A.S.M.E.,* 1937. pp.707-713. (HYD-59-15).**

Folder 27.1 ***Air chambers and valves in relation to water hammer,*** **by R.W. Angus, in *Transactions of the A.S.M.E.,* 1937. pp.661-668. (HYD-59-8).**

Folder 27.2 ***Air chambers for discharge pipes,*** **by Lorenzo Allievi, in *Transactions of the A.S.M.E.,* 1937. pp.651-668. (HYD-59-7).**

Folder 27.3 ***Water hammer in pipes, including those supplied by centrifugal pumps: graphical treatment,* by Robert W. Angus, Institution of Mechanical Engineers, 1936.**

Physical Description: 47 p.

Folder 27.4 **[Pump, Patent no.1,730,337, by Toribio Bellocq, Buenos Aires, Argentina. Application filed August 30, 1928.]**

Physical Description: 4 p.

Folder 27.5 ***Water hammer problems in connection with the design of hydroelectric plants,* by E.B. Strowger, in *Transactions of the A.S.M.E.,* 1944. pp.377-392.**

Folder 27.6 ***Water-hammer analysis by the Laplace-Mellin transformation,* by G.R. Rich, in *Transactions of the A.S.M.E.,* July 1945. pp.361-376.**

Folder 27.7 ***Charts for designing air chambers for pump discharge lines,* by W.E. Evans and C.C. Crawford, in *Proceedings of the A.S.C.E.,* Vol.79, Sept.1953.**

Physical Description: 17 p. (Separate no.273).

Folder 27.8 ***Elements of graphical solution of water-hammer problems in centrifugal-pump systems,* by A.J. Stepanoff, reprinted from the *Transactions of the A.S.M.E.,* July 1949. pp.515-534.**

Folder 27.9 ***Pressure surges at large pump installations,* by J. Parmakian, American Society of Mechanical Engineers, N.Y., N.Y., 1952.**

Physical Description: 8+ p. (Paper no.52-A-60).

Folder 27.10 ***Water hammer in pipe lines; studies extended to include effects of imperfect reflection at discharge end, friction, non-uniform change of valve opening and imperfect action of discharge opening as a nozzle,* by W.F. Durand, *Engineering News-Record,* Vol.85, No.26, Dec.23, 1920. pp.1212-1216.**

Folder 27.11 ***See* 26.12**

Folder 27.12 ***An extension of the theory of water hammer,* by R. Skalak, American Society of Mechanical Engineers, N.Y., N.Y., April 1955.**

Physical Description: 25 p. (Paper no.55-S-18).

Folder 27.13 **a) *Water hammer,* by N. Joukovsky, translated by O. Sinnin, 1898.**

Physical Description: 12 p. (typescript).

b) [Note summarizing results of researches on water hammer by Carmichel, Eydoux, and Gariel, Comptes Rendus, Oct.22, 1917.

Physical Description: 3 l.]

Box Box 6, Folder 27.14 ***Water hammer investigation,* by Gosline, Deming, Trolese, Schullerts, Coit, Kirchhoff, McGlynn, March 1930.**

Physical Description: 1 folder (handwritten), photos.

Folder 27.15 **[Notes on 2" water hammer experiments, including: original data, computed data, oscillograph films and pictures, and notes of Prof. LeConte, prepared by L. Laine, April 1934.]**

Physical Description: 1 folder (handwritten).

WATER HAMMER, CHAPTER 9

Box Box 6, Folder 28.1 **[Folder containing articles in re water hammer]:**

Longitudinal wave transmission and impact, **by L.H. Donnell, ASME Paper APM-52-14, 1930.**
Photocopy of Chapter XIV-(Section E), Hydraulic Ram, from *The control of Water,* by P.M. Parker.
Effect of speed regulation and water hammer on the design of relief valves, penstocks and surge tanks, **Hydraulic Power Committee, 1926-27.**
Graphical records of surge pressures in pipe lines, **by R. Bennett, *Engineering News-Record,* Vol.82, No.22. pp.1048-1216.**
The calculation of pressure surges in pipelines, **by P. de Haller, June 1929.**
Note sur le calcul du coup de belier dans les conduites sous pression, **par Ed. Carey, 1918.**

Folder 28.2 **[Folder containing articles in re pumping-theory-water hammer]:**

Elements of graphical solution of water hammer problems in centrifugal pump systems, **by A.J. Stepanoff, ASME Paper No.48-A-89, 1948.**
Complete characteristics of centrifugal pumps and their use in the prediction of transient behavior, **by R.T. Knapp, ASME, HYD-59-11, 1937.**
Pompes centrifuges et usines elevatoires, **par M.L. Bergeron, 1935.**

Folder 28.3 **[Folder containing miscellaneous publications on water hammer, pumps]:**

Methods employed to remedy water-hammer shock in pumping systems, **by E.B. Ball, ASME, 1937.**
The application of Heaviside's operational calculus to the solution of problems in water hammer, **by F.M. Wood, ASME Paper HYD-59-15, 1937.**
Hydraulic phenomena in fuel-injection systems for diesel engines, **by K.J. DeJuhasz, ASME Paper NO. HYD-59-9, 1937.**
Oscillations in closed surge tanks, **by A.M. Binnie, ASME, 1943.**
Speed of water-hammer pressure wave in transite pipe, **by L.H. Kessler, ASME, 1937.**
Theory of resonance in pressure conduits, **by C. Jaeger, ASME, 1937.**
Typical analysis of water hammer in a pumping plant of the Colorado River Aqueduct, **by R.M. Peabody, ASME, 1937.**
Discussion on experiments and calculations on the resurge phase of water hammer, **by J.N. LeConte, ASME Paper HYD-59-12, 1937.**
Discussion on operation of emergency shutoff valves in pipe lines, **by F. Knapp, ASME Paper HYD-59-10, 1937; and *Tests of heat-exchanger flanges,* by D.B. Rossheim, et al, Paper FSP-60-10, 1937.**
Discussion of running-in characteristics of some white-metal journal bearings, **by S.A. McKee and T.R. McKee, Paper RP-59-9, 1937; and *Relation of relief-valve and turbine characteristics in the determination of water hammer,* by E.P. Strowger, Paper HYD-59-14, 1937; *Transactions of the ASME,* Oct.1938, pp.607-610.**
Letter of July 31, 1940, to Prof. M.P. O'Brien from W.W. Helbush, San Francisco Public Utility Commission, containing pump notes on surging in pumplines, with attached charts.

Folder 28.4 **[Folder containing miscellaneous notes, translations, abstracts, etc. on water hammer, acoustic waves, surges, 1909-1910, 1917, 1928-1929.]**

Folder 28.5 ***Transactions of the American Society of Mechanical Engineers,*** **Vol.59, No.8, Nov.1937 ; includes papers from the 1937 Annual Meeting of ASME. pp.647-758.**

Folder 28.6 ***Symposium on water hammer,*** **arranged by the A.S.M.E. Committee on Water Hammer for presentation at the Palmer House on June 30, 1933, during Engineering Week at a Century of Progress Exposition, Chicago, Ill.**

Physical Description: 89 p.

Folder 28.7 ***Supplement to the report of the A.S.M.E. Committee on Water Hammer,*** **[A.S.M.E.].**

Physical Description: 151 p.

Folder 28.8 ***The occurrence and elimination of surge or oscillating pressures in discharge lines from reciprocating pumps,*** **by H. Diederichs, and W.D. Pomeroy, ASME Paper PET-51-2, 1929. pp.9-49.**

Folder 28.9 ***Mechanics of hydraulic-turbine pressure regulation,*** **by Arnold Pfau, *Transactions of ASME,* HYD-52-4, 1929. pp.29-53.**

HYDRAULIC RAM, ME 127 - CHAPTER 9

Box Box 6, Folder 29.1 ***Review of literature on water hammer, table of periodical literature reviewed,*** **by R.I. Hess, 1945.**

Physical Description: 1 folder.

Folder 29.2 ***The hydraulic ram,*** **by M.P. O'Brien and J.E. Gosline, University of California, Publications in Engineering, 1933.**

Folder 29.4 ***A perpetual water supply without fuel, oil or repairs,*** **advertisement from Rife Hydraulic Engine Manufacturing Company, New York, 1929.**

Folder 29.5 **[Photocopy of Chapter XIV-(Section E),** ***Hydraulic Ram*****, taken from** ***Control of water.*** **pp.842-853.]**

Folder 29.7 ***Experiment H-17, Hydraulic ram,*** **University of California, Hydraulic Laboratory [n.d.]**

Physical Description: 3 p.

LABORATORY HYDRAULIC RAM

Box Box 6, Folder 30.1 **[Figures 24-33 and Runs of Film - illustration for O'Brien and Gosline hydraulic ram, 1933.]**

Physical Description: 1 folder.

Folder 30.3 ***Hydraulic ram test; party report,* by E.Y Soomil and R.P. Work, for ME 131, University of California, April 1935.**

Physical Description: 1 folder (handwritten).

Folder 30.4 ***Hydraulic ram test calculations,* by E.Y Soomil, for ME 131B, University of California, April 1935.**

Physical Description: 13 p. (handwritten).

Folder 30.5 ***Hydraulic ram test,* by Raymond P. Work, for ME 131B, University of California, April 1935.**

Physical Description: 1 folder (unpaged) (handwritten).

Folder 30.6 **[Notes for Hydraulic Ram HE-14, by Fred Sperber, April 1935.]**

Physical Description: 1 v. (unpaged)

Folder 30.7 **[Notes for Hydraulic Ram HE-14, includes working sheets by Soomil and Work, April 1935.]**

Physical Description: 1 v. (unpaged)

Folder 30.8 ***Hydraulic ram data,* August 1931.**

Physical Description: 1 folder (unpaged) (handwritten)

ROTARY PUMPS

Box Box 6, Folder 31.1 **[Folder containing types of positive displacement pumps; descriptions, advertisements, figures, papers, articles, 1931-1946.]**

Folder 31.2 ***Rotary pumps for light liquids,*** **by William J. McGraw, for M.E. 127, University of California, May 1942.**

Physical Description: 1 folder.

Folder 31.3 ***Utility of variable-displacement oil-pressure pumps for hot-pressing in plywood operations,*** **by Elek K. Benedek, *Transactions of ASME,* 1933. pp.89-95. (WDI-56-2).**

Folder 31.4 **"The piston-crosshead motion of the oilgear pump,' by Elek Benedek, *Transactions of ASME,* [n.d.] pp.85-90. (APM-51-9).**

Folder 31.5 ***Frequency response of positive-displacement variable-stroke fuel pump,*** **by Harold Shames, Seymour C. Himmel and Darnold Blivas, National Advisory Committee for Aeronautics, Washington, D.C.,1950.**

Physical Description: 32 p. (Technical note 2109).

Folder 31.6 ***Some characteristics of rotary pumps in aviation service,*** **by R.J.S. Pigott, *Transactions of the A.S.M.E.,* Oct.1944. pp.615-623.**

Folder 31.7 ***Gear pump vapor-lock characteristics,*** **by Norman K. Dewhurst, for M.E. 131, University of California, May 1943.**

Physical Description: 54 l. (handwritten).

Folder 31.8 ***Thermodynamics of boiler feeding,*** **by Igor J. Karassik, Hydraulic Institute, New York [nd.]**

Physical Description: 39 p.

Folder 31.9 ***On the suction of volumetric pumps,*** **by S. Kikitine, C.R. Academy of Sciences, Paris, 1935, translated by A. Dugas.**

Folder 31.10 ***Influence of oil compressibility on speed characteristics of hydraulic high-speed presses,*** **by Walter Ernst, prepared for presentation at the Buffalo Section Meeting of A.S.M.E., Oct.3, 1932.**

Physical Description: 6 p. (typescript).

Folder 31.11 ***Vakuumkompressorn,*** **by John Ekelöf, *Teknisk Tidskrift,* April 1930. pp.45-50.**

Folder 31.12 ***Performance of a Worthington pumping engine,*** **by J.E. Denton, *Transactions of A.S.M.E,* 1891. pp.975-1013.**

Folder 31.13 ***The Brooklyn pumping engines of 1860,*** **by Samuel M'Elroy, *Transactions of A.S.M.E.,* 1891. pp.83-130.**

Folder 31.14 **[Folder containing material in re reciprocating pumps theory, includes:]**

- **Letter (copy) of June 6, 1942, to D.R.A. Jones, Southern California Gas Company, from R.G. Folsom, acknowledging gear pump data.**
- **Problems for M.E. 121 - Page 69.**
- ***Pump requirements for heavy liquids, Power Plant Engineering,*** **Feb. 15, 1931 (viscosity table).**
- ***The occurrence and elimination of surge or oscillating pressures in discharge lines from reciprocating pumps,*** **by H. Diederichs and W.D. Pomeroy, ASME PET-51-2, 1929.**

Folder 31.15 **[Folder containing notes and diagrams on the piston pump; M.E. 127 problems. n.d.]**

Folder 32.1 **[Articles on pumping, published by the American Society of Mechanical Engineers:]**

- ***Performance criteria for positive-displacement pumps and fluid motors,*** **by W.E. Wilson, 1948 (48-SA-14).**
- ***Rotary pump theory,*** **by W.E. Wilson, 1945.**
- ***Some characteristics of rotary pumps in aviation service,*** **by R.J.S. Pigott, 1944.**
- ***Effect of aeration on gear-pump delivery and lubrication ceiling,*** **by P.H. Schweitzer, 1944.**
- ***Power consumption of boiler-feed pumps,*** **by K.A. Mayr, 1944. (FSP-50-44)**
- ***Proposed expressions for Roots' Supercharger Design and efficiencies,*** **by F.A. Hiersch, 1943.**
- **"The modern hydraulic reservoir: how it provides micron-range filtration and pump supercharging, by W.W. Thayer, 1943.**
- ***High- and low-pressure airplane hydraulics in europe,*** **by J. Mercier, 1943.**
- ***Problems in modern deep-well pumping,*** **by C.J. Coberly, 1938. (PME-60-2).**
- ***Determination of the rate of discharge in jerk-pump fuel-injection systems,*** **by K.J. DeJuhasz, 1938 (OGP-60-2).**
- ***Plunger lift for pumping deep wells,*** **by H.W. Fletcher, 1936. (PME-58-1).**

***The reciprocating dry-vacuum pump,* by W.S. Weeks and P.E. Letchworth, 1928.**

Folder 32.2 ***Fuel injection pumps, Diesel Power and Transportation,* Nov. 1938. pp.989-996.**

Folder 32.3 ***The gear-wheel pump; a displacement-force analysis,* by William H. Rasche, *Bulletin of the Virginia Polytechnic Institute,* Vol.XXXVIII, No.11, Sept.1945. 19 p. (Engineering Experiment Station Series no.61).**

Folder 32.4 **[Notes from *Hydraulics of fuel injection pumps for compression-ignitiion engines,* NACA Report no.396, 1931]**

Physical Description: 4 p. (handwritten)

Folder 32.5 **[Notes on valves for reciprocating pumps; includes figures, photocopies. 1943.]**

Physical Description: 1 folder.

Folder 32.6 ***Fuel systems and accessories, Diesel Power and Transportation,* November 1938. pp.980-988.**

Folder 32.7 ***Test of a rotary pump,* by W.B. Gregory, *Transactions of A.S.M.E.,* 1906.**

Folder 32.8 ***Rotary pumps,* by J.T. Wilkin, *Transactions of A.S.M.E.,* 1902.**

Folder 32.9 ***Positive displacement pump and motor*, by R.G. Folsom, Aug.1940.**

Physical Description: 33 l. (typescript)

Folder 32.10 ***High-pressure gear pumps,* by T.E. Beacham, *Engineering,* March 22, 1946. pp.284-286, 310-312.**

Folder 32.11 **[Product Engineering reprints; pump diagrams from The Engineer (1949). Folder includes:]**

***Method of evaluating test data aids design of rotary pumps,* by W.E. Wilson, Oct.1945.**

***Design analysis of rotary pumps to obtain maximum efficiency,* by W.E. Wilson, Feb. 1946.**

***Graphical method for analyzing hydraulic pump and motor data,* by O.E. Teichmann, March 1946.**

Folder 32.12 ***Helpful hints that insure good rotary-pump performance,* by Darwin F. Schaub, reprinted from *Power,* March 1943.**

Physical Description: 3 p.

Folder 32.13 **[Material on rotary pumps including Illustrations, Chapter 10; notes on displacement pumps; notes on discharge stroke, for M.E.127, 1937.]**

Physical Description: 1 folder.

Folder 32.14 **[Folder containing photocopies of: *A history of rotary engines and pumps, Part II, No.1, The Engineer,* July 28, 1939; *Rotary pumps,* by R.J. Sweeney, *Journal of the American Society of Naval Engineers,* February 1943; *Hydraulic pumps for aeroplanes,* by F. Nixon, *Aircraft Engineering,* Nov. 1937.]**

Folder 32.15 **[Folder containing illustrations for M.E.127, on cross-section of positive displacement pumps; References. n.d.]**

Folder 32.16 ***Pumps for fluid power: Part 1, basic briefing,* by G.M. Thomas and R.W. Henke, *Mechanical Engineering,* Sept.1968. pp.41-46.**

COMPRESSED AIR

Box Box 6, Folder 33.1 **a) *Compressor explosions; an explanation,* by Walter S. Weeks, *Engineering and Mining Journal,* Dec. 1937.**

Physical Description: p.37.

b) *Clearance pockets for transmission line compressors,* by Harry J. Smith, *G A S,* Aug.1936. pp.36-40.
c) *Performance of a large blowing engine,* [by N.L. Stewart, ASME, Oct.1931].

Folder 33.2 ***Transmission of power in compressed gas atmospheres,* by H.M. Hobart, reprinted from the *Journal of the Franklin Institute,* Vol.234, No.3, Sept.1942. pp.251-354.**

Folder 33.3 ***Cooling effect of compressed air when freely expanded,* by W.S. Weeks, American Institute of Mining and Metallurgical Engineers, 1937. 6 p. (Technical publication no.793).**

Folder 33.4 ***The reheating of compressed air,* by C.R. Richards and J.N. Vedder, *University of Illinois Bulletin,* Vol.XIX, No.41, June 5, 1922. 95 p. (Illinois Engineering Experiment Station Bulletin no.130).**

Folder 33.5 **[Miscellaneous articles on compressed air, air measurement.]**

Physical Description: 1 folder.

***Measuring volumes of low-pressure air,* by E.H. Oneal and C.T. Todd, *Engineering and Mining Journal,* Aug.14, 1926.**
***A study of temperature in a two-stage air compressor,* by W.S. Weeks, C.F. Milisich, and H. LeC.Berteaux, *Engineering and Mining Journal,* May 9, 1925.**
***Leakage in compressed-air lines,* by Theodore Simons, *Engineering and Mining Journal,* March 18, 1922.**
***A method for measuring leakage in compressed air lines,* by W.S. Weeks, *Engineering and Mining Journal,* Jan.7, 1922.**
***The hydraulic air-compressor,* by A.E. Chodzko, *Mining and Scientific Press,* Dec.16, 1916.**
***Efficiency of compressed-air installations-I,* by T. Simons, Dec.16, 1916.**
***Efficiency of air compressors and the measurement of air flow,* by J.H. Rider, *The Engineering and Mining Journal,* June 26, 1915.**
***Measuring compressed air for cost distribution,* by B.B. Hood, *Engineering and Mining Journal,* June 27, 1914.**
***Expansion joint for pipe lines,* by C.L. Edholm, *Engineering and Mining Journal,* May 25, 1912.**
***Apparatus for testing air consumption of rock drills,* [drawing, n.d.]**
***Measuring low-pressure air,* by G.S. Weymouth, *Mining and Scientific Press,* April 20, 1912.**
***Operation of air-compressors,* by E.A. Rix, *Mining and Scientific Press,* Jan.6, 1912.**
***A device for making wedges,* by E. Jacobs, *Engineering and Mining Journal,* Oct.21, 1911.**
***Compressing air by water,* by G.C. McFarlane, *Mining and Scientific Press,* Feb.19, 1910.**
***Compressed air calculation short cuts,* by S.B. Redfield, *Engineering and Mining Journal,* Dec.11, 1909.**
***Simple problems in air-compression,* by E.A.Rix, *Mining and Scientific Press,* March 21, 1908.**

Folder 33.6 **[Miscellaneous articles from *Engineering* re compression.]**

Physical Description: 1 folder.

***Dry compression in refrigerating plants,* by J. and E. Hall, Limited, Dartford; June 26, 1942.**
***The compression and expansion of air,* by A.L. Egan, June 5, 1942.**
(Letters to the Editor regarding *Some Temperature effects with compressed air,* by A.L. Egan), July 4, 1941, June 20, 1941.
***Some temperature effects with compressed air,* by A.L. Egan, June 6, 1941.**
***Rapid discharge of gas from a vessel into the atmosphere,* by E. Giffen, Aug.23, 1940.**

Folder 33.7 **a) [Photocopy of article, *A constant-volume pump for circulating gases,* by I.E. Puddington, *Industrial and Engineering Chemistry,* Vol.17, no.9, n.d.]**
b) *The Lindner Formula for self-operating pump valves,* by O. Lutz, Sept.1930.
c) *Variable compressor clearance* ; *The exponent of compression, The Oil and Gas Journal,* Spril 8, 1943.

Folder 33.8 **[Letter, advertisement, from Gast Manufacturing Corporation, Benton Harbor, Mich., April 22, 1944.]**

Physical Description: 1 folder.

Folder 33.9 ***Roots vacuum pumps,* P.H. & F.M. Roots Company, Connersville, Ind, [n.d.] 16 p. (Catalogue 48).**

Folder 33.10 ***Symposium of papers on compressed air,*** **reprinted from the *Journal of the Institution of Certificated Engineers,* South Africa, May 1950 to Sept.1950.**

Physical Description: 172 p.

Folder 33.11 ***Pulsation phenomena in gas compression systems,*** **by Ira C. Bechtold, *Engineering and Science Monthly,* Vol.X, No.7, Oct. 1947. pp.6-11.**

Folder 33.12 **[Miscellaneous papers on compressed air.]**

Proposed expressions for Roots' supercharger design and efficiencies, **by F.A. Hiersch, ASME, June 1943.**

The reciprocating dry-vacuum pump, **by W.S. Weeks and P.E. Letchworth, ASME Paper FSP-50-43, May 1928.**

Experiments on the flow of air through engine valves, **by E.S. Dennison, T.C. Kuchler, and D.W. Smith, ASME Paper OGP-53-6, June 1931.**

Air compression with temperatures above adiabatic, with special reference to airplane superchargers, **by S.A. Moss, ASME Paper AER-55-5, June 1932.**

Calculation of flywheels for air compressors, **by H.R. Goss and H.V. Putnam, ASME Paper APM-51,12, May 1929.**

Folder 33.13 ***The theory of gas compression and circulation,*** **by D.M. Newitt, reprinted from *Transactions of the Institute of Chemical Engineers,* Vol.17, 1939. pp.153-168.**

Folder 33.14 ***Plain talks on air and gas compressors,*** **Worthington Pump and Machinery Corporation, Harrison, N.J. 3 v. (in 1 folder). (First, Second, and Third of a series)**

Folder 33.15 **[Correspondence *To the manufacturers, distributors, and users of tank mounted air compressors* in re tank mounted air compressors, CS126-45, Dec. 5, 1945, from I.J. Fiarchild, Chief, Division of Trade Standards, U.S. National Bureau of Standards, June 5, 1945.]**

Physical Description: 13 p.

Folder 33.16 ***Trade standards (adopted by Compressed Air Institute,*** **(Fifth Edition), Compressed Air Institute, New York, 1938.**

Physical Description: 109 p.

Folder 33.17 ***Sizing pipe for compressed air,*** **by J.M. Bartholomew, *Power,* May 1938.**

Folder 33.18 ***Principles of foundation design for enginess and compressors,*** **by W.K. Newcomb, reprinted from the *Transactions of the ASME,* April 1951, pp.307-312.**

SPECIAL PURPOSE PUMPS

Box Box 6, Folder 34.1 ***Large Humphrey pumps for Australia,*** **reprinted from *The Engineer,* Dec.21, 1923.**

Folder 34.2 ***Type W pumps,*** **[advertising brochure of the] Humphrey Gas Pump Co., Syracuse, N.Y. [n.d.]**

Physical Description: 20 p.

Folder 34.3 ***The Humphrey gas pump; a review of the development and present status of a device for pumping water by displacement,*** **by F. du P. Thomson, *Mechanical Engineering,* June 1934. pp.337-340.**

Folder 34.4 ***Spectacular pumping installations...*****, by F.C. Eibell, reprinted from *Mill & Factory Illustrated,* Aug. 1930.**

Folder 34.5 ***Selection of pumps for chemical service,*** **by Ward E. Pratt, reprinted from *Industrial and Engineering Chemistry,* Vol.31, April 1939. pp.408-415.**

Folder 34.6 **[List of references, Chapter 11, including: U.S. Patent Office, "Submersible Pump, GPE Howard, Nov.21, 1944, 2, 363, 419; and U.S. Patent Office, "Submersible Pump, GPE Howard, Nov. 21, 1944, 2, 363, 420.]**

Physical Description: 1 folder.

Folder 34.7 **a) *Certain aspects of high-pressure centrifugal pumping cycles,* by I.J. Karassik, ASME, April 3-5, 1944.**
b) *High pressure boiler-feed pumps - I and II,* by I.J. Karassik, Worthington Pump and Machinery Corp., March, May 1941.
c) *Centrifugal pumps for process use,* by A.T. Nielsen, Worthington Pump and Machinery Corporation, March 1942.

Folder 34.8 **a) *Submersible motors for deep-well pumping, Byron Jackson Newsletter,* Vol.XII, No.1, Nov.1, 1940.**
b) *Installs pump-motor 664 ft. below ground surface, Byron Jackson Newsletter,* Vol.XII, No.12, April 15,1941.

Folder 34.9 ***Selection and rating of oil well pumping units,*** **by Bowman Thomas, [n.p., n.d.]**

Folder 34.10 ***University of California pump-testing laboratory,*** **by Richard G. Folsom, *Mechanical Engineering,* April 1938. pp.301-305.**

Folder 34.11 ***Report on electrical submergible-motor centrifugal pumps for oil-well pumping,*** **submitted by B.H. Hellier, for M.E. 127, University of California, May 2, 1942.**

Physical Description: 19 l. (typescript)

Folder 34.12 **[Letter of March 5, 1945, to R.G. Folsom from G.C. Schneider (Barrett, Haentzens & Company) re Vertical pumps.]**

Physical Description: 1 folder.

Folder 34.13 **[Letter of March 4, 1937, to M.P. O'Brien from M.E. Walters, re sand pumps; including drawing.]**

Physical Description: 1 folder.

Folder 34.14 **a) "Bibliography of paper making, 1928-1935," by C.J. West, for M.E.127, University of California.**
b) *Hydraulic problems of the pulp and paper industry,* by M.L. Edwards, ASME, Sept.1940.
c) *Design of hydraulic machinery for modern production demands,* by R.W. Andrews, Jr., ASME, April 23, 1940.

Folder 34.15 ***Hydroseal pumps,*** **The Allen-Sherman-Hoff Co., Philadelphia, Pa., 1937. 35 p. (Catalog no.937, rev.ed.)**

Folder 34.16 ***Turbines and pumps for pump-fed power storage plants,*** **by A. Mass, *Escher Wyss News,* July-Sept.1930, Vol.3, No.3. pp.52-61.**

Folder 34.17 ***Development of special pumps for liquid metals...*****, by Edward F. Brill, *Mechanical Engineering,* May 1953. pp.369-373.**

Physical Description: (Also manuscript copy).

SOLIDS IN A FLOW

Box Box 7, Folder 35.1 **[Miscellaneous references, includes:]**

Gas engine test, Massachusetts Institute of Technology, May 1929.
Thesis on turbulence, by G.F. Djerig, Iowa Institute of Hydraulic Research, February 1935.
Slurry; rheology; suspensions (R.G. Folsom), 1928-1935.
Folsom correspondence on various articles.
***The viscosity of a fluid containing small drops of another fluid,* by G.I. Taylor, Series A, Vol.138, No.A834, Proc. Roy. Soc. London.**
Application of Stoks Law to the fall of sand particles in liquids.
***Flow of suspension through pipes, Eng.& Ind. Chem.,* 1939.**

Folder 35.2 **a) Letters from R.T. Hancock to R.G. Folsom, re: *Transportation of sand in pipe lines,* June 1938.**
b) *The Law of motion of particles in a fluid,* by R.T. Hancock, The Institution of Mining Engineers, July 21, 1937.

Folder 35.3 ***Field tests of rifled discharge pipe, U.S. Dredge Henry Bacon, January 14-23, 1937,* U.S. Engineer Office, Wilmington, N.C., 1937.**

Physical Description: 8+ l.

Folder 35.4 ***Recent results in the investigation of turbulence,* by L. Prandtl, *Zeitschrift des Vereines Deutscher Ingenieure,* Bd.77, Nr.5, 4 Februar 1933. pp.105-114.**

Folder 35.5 ***Viscosity of coal-ash slags,* by P. Nicholls, and W.T. Reid, *Transactions of A.S.M.E.,* Feb. 1940. pp.141-153.**

Folder 35.6 ***The flow of drilling mud,* by H.N. Herrick, [n.p., n.d.]**

Physical Description: 8 p.

Folder 35.7 ***Experimental study of loss of head in a closed pipe carrying clay slurry,* by Charles Hanocq, *Transactions of A.S.M.E.,* Feb. 1928. pp.75-78. (HYD-51-8)**

Folder 35.8 **[Notes on pumping clay slurry in 4 cast iron pipe. 1928]**

Physical Description: 1 folder.

Folder 35.9 ***Flow characteristics of fluid-fine particle mixtures,* by Scott Walker, unpublished thesis for Master of Science from the Massachusetts Institute of Technology, 1940. [Notes on selected pages]**

Folder 35.10 ***Dirt patterns on walls,* by R.A. Nielsen, reprinted from *Heating, Piping and Air Conditioning,* v.12, 1940. pp.389-394.**

Folder 35.11 ***Separation of dust from gases by centrifugal force,* by Frank Wills, in *Advance Reports* - Pacific Coast Gas Association, [n.d.] pp.2-4.**

Folder 35.12 ***Charakteristik der sinkgeschwindigkeit von flussablagerungen,* by von Dipl.-Ing. Wassiliew, Institut *Wodgeo*, Moskau, *Wasserkraft und Wasserwirtschaft,* Heft 23, Jahrg. 30, 1955. pp.271-278.**

Folder 35.13 ***Nomogram for the settling velocity of spheres,* by Hunter Rouse, Exhibit D of the Report of the Committee on Sedimentation, National Research Council, 1936-1937, October 1937. pp.57-64.**

Folder 35.14 ***The coefficient of resistance as a function of Reynolds number for solids of various shapes,* by Hakon Wadell, reprinted from the *Journal of the Franklin Institute,* Vol.217, No.4, April 1934. pp.459-490.**

Folder 35.15 ***The suspension of solids in a turbulent stream,* by E.G. Richardson, reprinted from *Proceedings of the Royal Society of London,* Series A, No.911, Vol.162, October 1937. pp.583-597.**

Folder 35.16 ***Some new sedimentation formulas,* by Hakon Wadell, reprinted from *Physics,* Vol.5, No.10, Oct.1934. pp.281-291.**

Folder 35.17 **[Material on slurry reports, tables, laboratory experiments. 1930]**

Physical Description: 1 folder.

Folder 35.18 ***Flow characteristics of solids-gas mixtures in a horizontal and vertical circular conduit,* by Leonard Farbar, reprinted from *Industrial and Engineering Chemistry,* vol.41, June 1949. pp.1184-1191.**

TRANSPORTATION OF SAND IN PIPES

Box Box 7, Folder 36.1 ***The transportation of sand in pipe lines,*** **by Morrough P. O'Brien and Richard G. Folsom, *University of California Publications in Engineering,* Vol.3, No.7, 1937. pp.343-384.**

Folder 36.2 ***Final report on transportation of sand in pipe lines,*** **U.S. Tidal Model Laboratory, University of California, Berkeley, June 5, 1935.**

Physical Description: 1 folder.

Folder 36.3 ***Transportation of sand and gravel in a four-inch pipe,*** **by G.W. Howard, ASCE, 1938. [Includes discussion by M.P. O'Brien and R.G. Folsom.]**

Folder 36.4 **[Miscellaneous letters, notes, graphs, re silt, settling velocities.]**

Physical Description: 1 folder.

Folder 36.5 **[Correspondence and notes to and from Morris Machine Works. 1937-1938.]**

Physical Description: 1 folder.

Folder 36.6 ***Journal and Proceedings,*** **Vol.142, No.2, December 1939, The Institution of Mechanical Engineers, St. James's Park, London.**

Physical Description: 191 p.

DREDGE PUMPS

Box Box 7, Folder 37.1 ***Experiments on the mechanics of sediment suspension,*** **by Hunter Rouse, reprinted from *Proceedings of the Fifth International Congress for Applied Mechanics,* 1938.**

Physical Description: 10 l.

Folder 37.2 **[Pencilled notes and drafts of water and sand curves, by C.K. Bagley, 1939.]**

Physical Description: 1 folder.

Folder 37.3 ***Power requirements for hydraulic dredging and the transportation of sand in pipelines; preliminary report,*** **by H.K. Armstrong, U.S. War Department, Office of the Chief of Engineers, Aug. 1940.**

Physical Description: 50 p.

Folder 37.4 **[Material on dredge pumps including blueprint data on performance of hydraulic dredges; and accompanying letter from R.L. Faughn (Guy F. Atkinson, George Pollock Company), 1942.]**

Physical Description: 1 folder.

Folder 37.5 **[Letter and discussion on G.W. Howard's *Effects of rifling on four-inch pipe transporting solids, Proc. ASCE,* Vol.65, No.9, 1939, pp.1591-1603.]**

Physical Description: 1 folder.

Folder 37.6 ***Operation of pipeline dredges, Multnomah and Wahkiakum in the Columbia River,*** **by Walter H. Russell, [n.p., Oct.1938]**

Physical Description: 28 l. (typescript)

Folder 37.7 ***A dredging pump of novel construction,*** **by Walter J. White, presented at the Annual Meeting of the American Society of Mechanical Engineers, New York, Dec.2-5, 1919. pp.709-730. (Paper no.1716.)**

Folder 37.8 ***National Bureau of Standards report on tests of dredge suction booster,*** **Washington, D.C., Dec. 1941.**

Physical Description: 23+ p.

Folder 37.9 ***Der schwimmbaggerbau von schichau,*** **von Erich Schrambohmer, *Zeitschrift des Vereines Deutscher Ingenieure,* Bd.81, Nr.35, Aug.28, 1937. pp.1001-1003.**

Folder 37.10 ***Contribution to the study of dredging and the pumping of material in the form of mixtures,*** **by P. Durepaire, 1939.**

Considerations physiques sur L'Influence des Corps en Suspension Daus L'eau Das Les Turbo-Machines Hydrauliques. **(Physical considerations on the influence of suspended bodies in water in hydraulic turbines and pumps), by J.E. Immergluck, 1948.**

[Letter of Oct.28, 1940, to R.G. Folsom from W.P. Berggren, with abstract of *On the flow of suspensions through narrow tubes,* by F.J. Dix and G.W.S. Blair.]

Folder 37.11 **[Fort Peck data: pumps, pump lines (1936, 1937?); information regarding hydraulic dredges (2.c.); daily reports.]**

Physical Description: 1 env.

Folder 37.12 ***Dredging by the hydraulic method,*** **Bulletin 644 of the Ellicott Machine Corporation, 1936.**

Physical Description: 12 p.

Folder 37.13 ***Hydraulic pipe line dredges of small and medium size,*** **Bulletin 660 of the Ellicott Machine Corporation, 1938.**

Physical Description: 19 p.

Folder 37.14 **[Material on dredge pumps including: diagram, patent information on ball joint for pipe lines, O.C. Goeriz, May 1933; method and apparatus for hydraulic dredging, Sept. 1925.]**

Physical Description: 1 folder.

Folder 38.1 **[Folder containing article, *900 tons of sand pumped daily,* from *The Dragon;* and blueprints on centrifugal dredge pumps, U.S. Eng. Office, Portland, 14.] 19**

Folder 38.2 **[Extra copies of prints and photostats, HE 66 (1939-1940); correspondence, 1941.]**

Physical Description: 1 folder.

Folder 38.3 **a) *More profit from suction dredges,* by R.L. Vaughn, *Engineering News-Record,* Feb.29, 1940. pp.50-54.**
b) *Measuring velocities in dredge pipes; salt-velocity method applied to pipe lines transporting solids,* by George W. Howard, *Mechanical Engineering,* 1923. pp.287-288.

Folder 38.4 ***The effect of material in suspension on the characteristics of centrifugal pumps,* by Leigh C. Fairbank, Jr., thesis, Master of Science, University of California, Berkeley, April 1940.**

Folder 38.5 ***Discussion of 'The Horizontal Carriage of Granular Material by an Injector-Driven Air Stream',* by S.A. Wood and A. Bailey, University of California, Berkeley, [n.d.]**

Physical Description: 1 v. (various pagings)

CAVITATION

Box Box 7, Folder 39.1 **[Miscellaneous articles and references on cavitation.]**

Physical Description: 1 folder.

Folder 39.2 ***Cavitation,* by Henry F. Schmidt, reprinted from *Journal of the American Society of Naval Engineers,* Vol.XLV, No. 3, Aug.1933. pp.253-269.**

Folder 39.3 ***Laboratory investigations of the mechanisms of cavitation,* by Robert T. Knapp and A. Hollander [n.p., n.d.]**

Physical Description: 26 l.

Folder 39.4 **[Various papers on cavitation, includes:]**

***Accelerated field tests of cavitation intensity,* by R.T. Knapp, ASME, 1956.**
***Cavitation in the mixing zone of a submerged jet,* by H. Rouse, 1953.**
***Present status of cavitation research,* by R.T. Knapp [n.d.]**
***Determination of the relative resistance to cavitation erosion by the vibratory method,* by S.L. Kerr, 1937.**
***Pitting resistance of metals under cavitation conditions,* by J.M. Mousson, 1937.**
***Discussion of metals due to cavitation under experimental conditions,* by M. Kurrein, ASME, 1936.**
***Failure of metals due to cavitation under experimental conditions,* by H.N. Boetscher, ASME, 1935.**
***Progress in cavitation research at Princeton University,* by L.F. Moody and A.E. Sorenson, ASME, 1935.**
***Cavitation and erosion investigated as a problem in fluid mechanics,* by W.W. Pagon, ASME, 1934.**

Folder 39.5 ***Accelerated cavitation research,* by William J. Rheingans, [n.p.,] 1949.**

Physical Description: 26+ l.

Folder 39.6 ***A comparison of wall effects on super-cavitating flows past symmetric bodies in solid wall channels and jets,* by Hirsh Cohen and Yih-O Tu, Rensselaer Polytechnic Institute, Department of Mathematics, Troy, N.Y., Oct. 1956. 13+ p. (RPI MathRep No. 5)**

Folder 39.7 ***Cavitation characteristics and infinite aspect ratio characteristics of a hydrofoil section,* by James W. Daily, ASME, July 1948. 15+ p. (Paper no. 48-SA-30)**

Folder 40.1 ***The Hydrodynamics Laboratory of the California Institute of Technology,* by Robert T. Knapp, et al, ASME, Jan. 1948. 20 p. (Paper no. 47-A-112).**

Folder 40.2 ***The water tunnel as a tool in hydraulic research,* by James W. Daily, reprinted from *Proceedings of the Third Hydraulic Conference,* Bulletin 31, University of Iowa Studies in Engineering, 1947. pp.169-191.**

Folder 40.3 ***Water tunnel investigations of steady state cavities,* by Phillip Eisenberg and Hartley L. Pond, U.S. Navy Department, The David W. Taylor Model Basin, Washington, D.C. Oct. 1948. 11 l. (Report no. 668)**

Folder 40.4 ***Cavitation testing in water tunnels,* by Rueben M. Olson, St. Anthony Falls Hydraulic Laboratory, University of Minnesota, Dec.1954. 49 p. (Project report no. 42).**

Folder 40.5 ***On cavity formation in water,* by E. Newton Harvey, Wm. D. McElroy, and A.H. Whiteley, *Journal of Applied Physics,* Vol. 18, Feb. 1947. pp.162-172.**

Folder 40.6 ***Experimental research on cavitation collapse pressures,* by John K. Vennard and Claud C. Lomas, Jr., Stanford University, Department of Civil Engineering, Dec. 1950.**

Physical Description: 44 l.

Folder 40.7 ***The dynamics of cavitation bubbles,* by Milton S. Plesset, ASME, Jan. 1949. 11 p. (Paper no.48-A-107)**

Folder 40.8 ***Observations on cavitation bubble collapse,* by Albert T. Ellis, California Institute of Technology, Hydrodynamics Laboratory, Dec.1952. 77 p. (Report no.21-12)**

Folder 40.9 ***Evaluation of the integrals occurring in the cavity theory of Plesset and Shaffer,* by Byrne Perry, California Institute of Technology, Hydrodynamics Laboratory, Dec.1952. 24 p. (Report no.21-11)**

Folder 40.10 ***On the stability of gas bubbles in liquid-gas solutions,* by P.S. Epstein and M.S. Plesset, reprinted from *Journal of Chemical Physics,* Vol.18, No.11, Nov.1950. pp.1505-1509.**

Folder 40.11 ***The collapse and rebound of a gas bubble,* by Leon Trilling, California Institute of Technology, Feb. 1951.**

Physical Description: 12 l.

Folder 40.12 ***The growth or collapse of a spherical bubble in a viscous compressible liquid,* by Forrest R. Gilmore, California Institute of Technology, Hydrodynamics Laboratory, April 1952. 40 l. (Report no.26-4)**

Folder 40.13	***Cavitation mechanics and its relation to the design of hydraulic equipment,*** **by Robert T. Knapp, excerpt from *Proceedings (A),* The Institute of Mechanical Engineers, 1952, Vol.166. pp.150-163.**
Folder 40.14	***The shock produced by a collapsing cavity in water,*** **by M.F.M. Osborne, *Transactions of A.S.M.E,* April 1947. pp.253-263.**
Folder 40.15	***Mechanism of cavitation inception and the related scale-effects problems,*** **by R.W. Kermeen, J.T. McGraw and B.R. Parkin, ASME, April 1954. (Paper no.54-Mex-1)**
Folder 40.16	***The development of cavitation noise by model propellers,*** **by M. Strasberg, U.S. Navy, The David W. Taylor Model Basin, Sept.1946. 57 p. (Report no.543).**
Box Box 8, Folder 41.1	***Force measurements on resisting bodies and blade profiles in flowing water in cases of cavitation,*** **by E. Martyrer, in *Hydromechanical Problems in the Propulsion of Ships,* 1932. Translated by Hans Schlomka (No.133). 17 p. (typescript). (Works Progress Administration Project no.58).**
Folder 41.2	***Cavitation in centrifugal pumps,*** **by A.J. Stepanoff, *Transactions of A.S.M.E.,* October 1945. pp.539-552.**
Folder 41.3	***An experimental study of axial flow pump cavitation,*** **by P. Guinard, T. Fuller, and A.J. Acosta, California Institute of Technology, Hydrodynamics Laboratory, Pasadena, Calif., Aug. 1953. 19 l. (Report no.E-19.3)**
Folder 41.4	***Cavitation characteristics of centrifugal pumps described by similarity considerations,*** **by G.F. Wislicenus, R.M. Watson, and I.J. Karassik, *Transactions of the A.S.M.E.,* Jan.1939. pp.17-24. (Includes Discussion, by J.W. MacMeeken, *Transactions,* Feb.1940, pp.155-165.)**
Folder 41.5	***Cavitation study,*** **by K.W. Beattie, in *Baldwin Southwark,* Sept.1940, pp.20-23; and *What cavitation is,* by Lewis F. Moody, reprinted from *Baldwin Southwark,* Third Quarter, 1938.**
Folder 41.6	***A theory of cavitation flow in centrifugal-pump impellers,*** **by Calvin A. Gongwer, *Transactions of the A.S.M.E.,* January 1941. pp.29-40.**
Folder 41.7	***Test stand for centrifugal and propeller pumps,*** **by G.F. Wislicenus, reprinted from *Transactions of A.S.M.E.,* August 1942. pp.619-624.**
Folder 41.8	***Cavitation of hydraulic-turbine runners,*** **by R.E.B. Sharp, *Transactions of the A.S.M.E.,* October 1940. pp.567-575.**
Folder 41.9	***Cavitation on marine propellers,*** **by Lybrand P. Smith, *Transactions of the A.S.M.E,* Sept.1937. pp.409-456.**
Folder 41.10	***Cavitation laboratory for hydraulic turbines; details of test equipment and calibration proceudre,*** **by Hans Ulmann and R.S. Sproule, *Mechanical Engineering,* March 1953. pp.194-198.**
Folder 41.11	***What is 'NPSH'?*** **by Dan R. Rankin, in *Petroleum Refiner,* June 1953.**
Folder 41.12	***How to use system-head curves,*** **by Melvin Mann, in *Chemical Engineering,* February 1953.** **Physical Description:** 2 p.
Folder 41.13	***Some notes on a new method of representing cavitation results; and application to determination of suction heads for centrifugal pumps for various services,*** **by G.F. Wislicenus, R.M. Watson, and I. J. Karassik, Worthington Pump and Machinery Corp., Harrison, N.J., December 1937. 15+ p. (includes blueprints).**
Folder 41.14	**[Several papers on cavigation, dated 1926-32.]** **Physical Description:** 1 folder.
Folder 41.15	***On the collapse of a hemispherical cavity seated on a surface,*** **by Hasmukh P. Oza, *Journal of Applied Mechanics,* March 1947. pp.39-42.**
Folder 41.16	***An experimental study of acoustically induced cavitation,*** **by William J. Galloway, University of California, Department of Physics, Los Angeles, Calif., November 1953. 60 p. (Technical report no.VII)**
Folder 41.17	***The inception of cavitation on isolated surface irregularities,*** **by J.W. Holl, *Transactions of the ASME,* May 1959. 15 p. (Paper no.59-HYD-12).**
Folder 41.18	***Adiabatic flow of flashing liquids in pipes,*** **by M. Sajben, *Transactions of ASME,* June 1961. (Paper no.61-Hyd-7).**
Folder 41.19	***The tensile strength of liquids: a review of the literature,*** **by F.G. Blake, Jr., Harvard University, Dept. of Engineering Sciences and Applied Physics, June 1949. 68 p. (Technical memorandum no.9)**
Folder 41.20	**[Notes from Mitteilungen uber forschungsarbeiten auf dem gebiete des Ingenieurwesens Verein deutscher Ingenieure, Heft 112, Berlin, 1911.]** **Physical Description:** 2 p. (handwritten)
Folder 41.21	***Some corrosion effects in accelerated cavitation damage,*** **by W.C. Leith and A. Lloyd Thompson, *Transactions of ASME,* Jan.1960. 8 p. (Paper no.59-A-52)**
Folder 41.22	***The selection of length and head scales for cavitation tests,*** **by Pierre Danel and Jacques Duport, *Transactions of ASME,* Jan. 1960. 6 p. (Paper no.59-A-40)**

Folder 41.23 ***The prediction of centrifugal pump cavitational head-capacity characteristics,*** **by Arthur L. McGee, for ME 199, University of California, Berkeley, May 26, 1959.**

Physical Description: 30 p.

Folder 41.24 ***The study of cavitation on screw propellers,*** **by H. Lerbs, translated by M.C. Roemer, U.S. Experimental Model Basin, Navy Yard, Washington, D.C., April 1937. 60+ l. (Translation no.46)**

Folder 41.25 ***Accelerated field tests of cavitation intensity,*** **by R.T. Knapp, reprinted from the *Transactions of the ASME,* January 1958. pp.91-102.**

Folder 41.26 ***The six-inch water tunnel at the St. Anthony Falls Hydraulic Laboratory and its experimental use in cavitation design studies,*** **by Lorenz G. Straub, John F. Ripken, and Rueben M. Olson, University of Minnesota, St. Anthony Falls Hydraulic Laboratory, Minneapolis, March 1956. 22 l. (Technical paper no.16, Series B)**

Folder 41.27 ***see*** **41.22**

Folder 41.28 ***On the mechanism of cavitation damage,*** **by M.S. Plesset and A.T. Ellis, California Institute of Technology, Hydrodynamics Laboratory, Pasadena, Calif., June 1954. 1 v. (various pagings) (Report no.21-15)**

Folder 41.29 ***Proceedings of the National Conference on Industrial Hydraulics,*** **(3rd Annual Meeting, October 16-17, 1947), Armour Research Foundation, Chicago, Ill.**

Physical Description: 129 p.

Folder 41.30 ***Concerning cavitation installations for small cavitation numbers,*** **by H. Reichardt, Headquarters Air Materiel Command, Wright Field, Dayton, Ohio, August 1946.**

Physical Description: 23 p.

Folder 41.31 ***Hydrodynamics Laboratory,*** **California Institute of Technology, Pasadena, Calif. [n.d.]**

Physical Description: 1 v.

Folder 41.32 ***The dynamics of cavitation bubbles,*** **by M.S. Plesset, reprinted from the *Journal of Applied Mechanics,* Sept. 1949. pp.277-282.**

Folder 41.33 ***Suction head correction for centrifugal pumps,*** **by John M. Soth, Alexander Brkich and Harold Stahl, Ingersoll-Rand, N.Y., May 1959.**

Physical Description: 11 p.

Folder 41.34 ***Metastable flow of saturated water,*** **by Joel F. Bailey, ASME, July 1951. 13 p. (Paper no.51-SA-55)**

Folder 41.35 ***Cavitation-free inlets and contractions; electrical analogy facilitates design problem,*** **by Hunter Rouse and M.M. Hassan, *Mechanical Engineering,* March 1949, Vol71, no.3. pp.213-216.**

Folder 41.36 ***Direct measurement of net positive suction head,*** **by Robert B. Jacobs, Kenneth B. Martin and Richard J. Hardy, *Transactions of ASME,* Jan.1959. 4 p. (Paper no.58-A-38)**

Folder 41.37 ***Camera captures cavitation, Comp. Air Magazine,*** **January 1961.**

Folder 41.38 ***Recent investigations of the mechanics of cavitation and cavitation damage,*** **by Robert T. Knapp, reprinted from *Transactions of the ASME,* October 1955. pp.1045-1054.**

Folder 41.39 ***Further studies of the mechanics and damage potential of fixed type cavities,*** **by Robert T. Knapp, presented at the Symposium on Cavitation in Hydrodynamics, held at the National Physical Laboratory, Teddington, England, Sept.14-17, 1955.**

Physical Description: [9 p.]

Folder 41.40 ***See*** **41.22**

Folder 41.41 ***The shock produced by a collapsing cavity in water,*** **by M.F.M. Osborne, *Transactions of the ASME,* Vol.69, No.3, April 1947. pp.253-266.**

Folder 41.42 ***Cavitation in centrifugal pumps,*** **by A.J. Stepanoff, reprinted from the *Transactions of the A.S.M.E.,* October 1945. pp.539-552.**

Folder 41.43 ***Turbulence and boundary layer effects on cavitation inception from gas nuclei,*** **by J.W. Daily, and V.E. Johnson, Jr., American Society of Mechanical Engineers, Oct.1956. 14 p. (Paper no.55-A-142).**

Folder 41.44 ***Determination of the relative resistance to cavitation erosion by the vibratory method,* by S. Logan Kerr, preprinted from *Transactions of the A.S.M.E.,* July 1937.**

Physical Description: 25 p.

Folder 41.45 ***Cavitation on marine propellers,* by Lybrand P. Smith, preprinted from *Transactions of the A.S.M.E.,* July 1937.**

Physical Description: 23 p.

Folder 41.46 ***Pitting resistance of metals under cavitation conditions,* by J.M. Mousson, preprinted from A.S.M.E. *Transactions,* July 1937.**

Physical Description: 10 p.

Folder 41.47 ***A preliminary study of steam and water flow in venturi tubes,* by R.V. Smith, et al, Colorado State University, Fort Collins, September 1960.**

Physical Description: 29 p.

Folder 41.48 ***The critical flow of hot water through short tubes,* by F.R. Zaloudek, General Electric Co., Hanford Atomic Products Operation, Richland, Washington, May 1963. 33 l. (HW-77594, and UC-38, Engineering and equipment)**

Folder 41.49 ***Linearized theory of cavity flow in two-dimensions,* by Blaine R. Parkin, Rand Corporation, Santa Monica, Calif., July 1959.**

Physical Description: 185 p.

Folder 41.50 **"Cavitation in a venturi tube passing Nak (78°/K.) alloy at 200-300 c.", by T.I.M. Crofts, United Kingdom Atomic Energy Authority, Industrial Group, August 1954. 1 v. (unpaged) (Declassified reprint).**

Folder 41.51 ***On the stability of the spherical shape of a vapor civity in a liquid,* by M.S. Plesset and T.P. Mitchell, California Institute of Technology, Hydrodynamics Laboratory, July 1954. 14+ p. (Report no.26-9)**

Folder 41.52 ***Behavior of piezo-electric transducer systems,* from *Sonically induced cavitation,* by Frank Watson Neilson, J. Hugh Hamilton, and L. Dale Harris, University of Utah, Engineering Experiment Station, Salt Lake City, August 1954. 148 p. (Technical report V)**

Folder 41.53 ***The thermodynamics of bubbles,* by John A. Clark, Massachusetts Institute of Technology, Cambridge, January 1956. 24+ p. (Technical report no.7)**

Folder 41.54 ***Water tunnel investigation of two-dimensional cavities,* by R.L. Waid, California Institute of Technology, Hydrodynamics Laboratory, Pasadena, Calif., September 1957. 3+ p. Report no.E-73.6)**

Folder 41.55 ***Cavitation in turbo pumps-Part 1,* by L.B. Stripling and A.J. Costa, *Transactions of the ASME,* January 1962. 13 p. (Paper no.61-WA-112)**

Folder 41.56 ***Cavitation in turbopumps-Part 2,* by L.B. Stripling, *Transactions of the ASME,* January 1962. 11 p. (Paper no.61-WA-98)**

Folder 41.57 ***On cavitation produced by a vortex trailing from a lifting surface,* by B.W. McCormick, Jr., *Transactions of the ASME,* January 1962. 11 p. (Paper no.61-WA-100)**

Folder 41.58 ***Effect of cavitation on the accuracy of Herschel-type venturi tubes,* by F. Numachi, R. Kobayashi, and S. Kamiyama, *Transactions of the ASME,* January 1962. 10 p. (Paper no. 61-WA-99)**

Folder 41.59 ***Visual cavitation studies of mixed flow pump impellers,* by G.M. Wood, *Transactions of the ASME,* June 1962. 12 p. (Paper no.62-Hyd-12).**

Folder 41.60 ***Cavitation research on a centrifugal pump,* by T.C. Chivers, American Society of Mechanical Engineers, New York, April 1970. 9 p. (Paper no. 69-FE-27).**

AXIAL AND RADIAL THRUST IN CENTRIFUGAL PUMPS

Box Box 8, Folder 42.1 ***Volute pressure distribution, radial force on the impeller, and volute mixing losses of a radial flow centrifugal pump,*** **by H.W. Iversen, R.E. Rolling, and J.J. Carlson, *Transactions of the ASME,* Vol. 82, No. 2, April 1960. pp.136-144.**

Folder 42.2 ***An experimental investigation of radial thrust in centrifugal pumps,*** **by A. Agostinelli, D. Nobles, and C.R. Mockridge, *Transactions of the ASME,* May 1959. 6 p. (Paper no. 59-Hyd-2).**

Folder 42.3 ***Leakage loss and axial thrust in centrifugal pumps,*** **by Alexey J. Stepanoff, *Transactions of the ASME,* Vol. 54, No. 15, August 1932. pp.65-11. (HYD-54-5).**

Folder 42.4 ***Some performance characteristics of deep-well turbine pumps,*** **by R.G. Folsom, reprinted from A.S.M.E. *Transactions,* April 1941. pp.245-250.**

Folder 42.5 ***Centrifugal pumps for the Colorado River Aqueduct,*** **by Robert L. Daugherty, *Mechanical Engineering,* April 1938. pp.295-299.**

Folder 42.6 ***Axial and radial thrust in multi-stage centrifugal pumps,*** **by Max Spillman, Worthington Pump and Machinery Corporation [n.d.]**

Physical Description: 7 p.

Folder 42.7 ***Some general results of pump tests at the Hydraulic Testing Laboratory at California Institute of Technology,*** **by F.L. Wattendorf, Metropolitan Water District of Southern California, August 1935.**

Physical Description: 7+ l.

Folder 42.8 ***Field failure, large ball thrust bearings, Pump Motor Service,*** **[n.p.]Feburary 1946.**

Physical Description: 23 p.

Folder 42.9 ***Pressure distribution and radial forces in a centrifugal pump,*** **by H.P. Bausch, for ME 199, University of California, Berkeley, May 1959.**

Physical Description: 27 l. (handwritten)

Folder 43.1 ***Axial thrust of 2 x 16 WB pump,*** **Pacific Pumps, Inc., Huntington Park, Calif., November 1959. 3+ p. (includes data tables, photo, blueprint)**

Folder 43.2 ***Load distribution within ball and roller bearings for given external radial and thrust loads,*** **by Harald Sjovall, SKF Inc., 1946.**

Physical Description: 23 p.

Folder 43.3 **[Untitled thesis by Charles Cehrs - original figures, August 1951.]**

Physical Description: 1 folder.

Folder 43.4 ***Measurement of transient thrust loads in vertical turbine pumps,*** **by Charles Harold Cehrs, unpublished thesis, University of California, 1951.**

Physical Description: 58 p. (typescript)

Folder 43.5 ***Prediction of head capacity for centrifugal pump,*** **by R.E. Rolling, for ME 298, University of California, Berkeley, 1956.**

Physical Description: 24 p. (handwritten)

PUMP TESTING

Box Box 8, Folder 44.1 ***The evolution of low-lift pumping plants in the Gulf Coast country,*** **by W.B. Gregory, American Society of Mechanical Engineers, New York, April 1916.**

Physical Description: 205 p.

Folder 44.2 ***Der Genauigkeitsgrad von Flügelmessungen bei Wasserkraftanlagen,*** **von A. Staus, mit 15 Textabbildungen und 4 Zahlentafeln, Berlin 1926.**

Physical Description: 35 p.

Folder 44.3 ***Coordinate methods of measuring pipe flow,*** **by J.E. Christiansen, [n.p.] 1937.**

Physical Description: 6 p.

Folder 44.4 ***Outline of paper 'Summary of Work of Pump Testing Laboratory'*****, by R.G. Folsom, presented at Pump Testing Conference, Berkeley, November 10, 1939.**

Physical Description: 9 l.

Folder 44.5 ***An investigation of the performance of large centrifugal pumps using air as a medium,*** **by Miguel A. Quinones, Rensselaer Polytechnic Institute, Troy, N.Y., Sept. 1934. 48 p. (Bulletin no. 48, Engineering and science series)**

Folder 44.6 ***Kort's nozzle tugboat,*** **from a lecture by Reg Baurat Goede, before the Society of Supporter of the Hanover Institute of Experiments for Ground and Water Construction, Nov. 1932.**

Physical Description: 7 l.

Folder 44.7 ***University of California pump-testing laboratory,*** **by Richard G. Folsom, reprinted from *Mechanical Engineering* April 1938, pp.301-305.**

Folder 44.8 ***The aerodynamic testing of centrifugal pumps and water turbines, Engineering,*** **Jan. 27, 1939. pp.93-96.**

Folder 44.9 **[Folder containing Standard Symbols, including:]**

American tentative standard symbols for hydraulics, **approved by American Standard Association, July 1929;**

American standard mathematical symbols, **approved by American Engineering Standard Committee, January 1928;**

American standard symbols for mechanics, structural engineering and testing materials, **approved by American Standards Association, January 1932;**

American tentative standard symbols for heat and thermodynamics, **approved by American Standards Association, February 1931.**

Folder 44.10 ***Australian standard rules for acceptance tests of pumps, known as the S.A.A. Pump Test Code,*** **University of California, Department of Mechanical Engineering, 1940.**

Physical Description: 20 l.

Folder 44.11 ***New facilities for pump testing at Allis-Chalmers,*** **[n.p., n.d.]**

Physical Description: 17 l.

Folder 44.12 ***The Hydraulic-Machinery Laboratory at the California Institute of Technology,*** **by R.T. Knapp, *Transactions of the ASME,* January 1937. pp.663-675. (HYD-58-5).**

Folder 44.13 ***Pump testing laboratory; testing centrifugal pumps,*** **presented by M.P. O'Brien and R.G. Folsom at Rural Electrification Conference, University of California, Davis, Jan. 16, 1940.**

Physical Description: 7 l.

Folder 44.14 ***An improved technique for centrifugal-pump-efficiency measurements,*** **by Robert W. Angus, *Transactions of the A.S.M.E.,* January 1941. pp.13-28.**

Folder 44.15 ***Reducing the cost of operating centrifugal water works pumps,*** **by A. Peterson, reprinted from *Journal of the American Water Works Association,* July 1936. pp.868-876.**

Folder 44.16 ***Performance and test standards for self-priming centrifugal pumps,*** **The LaBour Company, Inc., Elkhart, Ind, [n.d.]**

Physical Description: 30 p.

Folder 44.17 ***Measurement of irrigation water on the farm,*** **by H.A. Wadsworth, University of California, Agricultural Experiment Station, July 1922. 36 p. (Circular no. 250)**

Folder 44.18 ***A study of small individual and cooperative pumping enterprises in Orange County,*** **by James R. Tavernetti and M.R. Huberty, University of California, Agricultural Experiment Station, Berkeley, October 1936.**

Physical Description: 14 l.

Folder 44.19 ***Regeln für leistungsversuche an kreiselpumpen,*** **aufgestellt von dem vom Verein deutscher Ingenieure und fom Kreiselpumpen, Verband gebeldeten Ausschulss in Den Jahren 1926 and 1927, Berlin, 1928.**

Physical Description: 27 p.

Folder 44.20 ***Vergleichs-wassermessungen am Walchenseewerk,*** **by O. Kirschmer, *Zeitschrift des Vereines Deutscher Ingenieur,* Bd. 74, Nr. 17, April 26, 1930. pp.521-528.**

Folder 44.21 ***Pump testing methods,*** **Appendix I, for ME 127, March 1939.**

Physical Description: 6 *l.* (typescript)

Folder 44.22 ***Acceptance tests of 3600 rpm de Laval centrifugal pump; special problem,*** **by George Petroff, for ME 131B, Spring 1938.**

Physical Description: 17 *l.*

Folder 44.23 ***Testing dry air vacuum pumps,*** **by Harwood F. Mullikin, *Mechanical Engineering,* vol. 53, no. 6, June 1931. pp.438-441**

Folder 44.24 ***Analysis of pump test and cost of pumping records,*** **by J.B. Brown (to R.G. Folsom), [n.p., n.d.]**

Physical Description: 4 *l.* (typescript)

Folder 44.25 ***Public utility pump testing service - why and how?*****, presented at Deep Well Pump Conference, Nov. 10, 1939.**

Physical Description: 5 p.

Folder 44.26 ***Hydraulic prime movers,*** **American Society of Mechanical Engineers, New York, 1949. 29 p. (Power Test Codes 18-1949).**

Folder 44.27 **[Effect of wall location (from pump suction line) on pump performance, by H.W. Iversen, June 1949.]**

Physical Description: 1 v. (unpaged)

Folder 44.28 **[Miscellaneous handwritten notes on pump testing; also includes photos, correspondence. 1948?]**

Physical Description: 1 folder.

HIGH VACUUM

Box Box 9, Folder 45.1 ***Calculating high vacuum systems,*** **by W.P. Dryer, U.S. Atomic Energy Commission, Oak Ridge, Tenn., [n.d.] 39 *l.* (MDC 459)**

New developments in vacuum engineering, **by Robert B. Jacobs and Herbert F. Zuhr, U.S. Atomic Energy Commission, Oak Ridge, Tenn. [n.d.] 39 *l.* (MDDC 52)**

Folder 45.2 ***The HV-1 oil-diffusion vacuum pump, Eimac News,*** **Vol. 3, no. 31, May-June 1945.**

Physical Description: 15 p.

Folder 45.3 ***Commercial molecular distillation,*** **by K.C.D. Hickman, reprinted from *Industrial and Engineering Chemistry,* Vol. 39, June 1947. pp.686-694.**

Folder 45.4 ***Kinney high vacuum pumps,*** **Kinney Manufacturing Co., Boston, Mass., 1945. (Bulletin V45)**

Folder 45.5 ***Vacuum refrigeration,*** **by D.H. Jackson, reprinted from *Industrial and Engineering Chemistry,* Vol. 28, May 1936. pp.522-526.**

Folder 45.6 ***High vacuum valves; packless construction,*** **National Research Corporation, Vacuum Engineering Division, Boston, Mass. (Bulletin no. V-1)**

Folder 45.7 ***High vacuum seals,*** **National Research Corporation, Vacuum Engineering Division, Boston, Mass., [n.d.] (Bulletin no. VS-1).**

Folder 45.8 ***Fuller rotary compressors and vacuum pumps,*** **Fuller Company, Catasauqua, Pa., Aug. 1948. (Bulletin C-5)**

Folder 45.9 ***Steam jet ejectors,*** **Elliott Company, Heat Transfer Department, Jeannette, Pa., [n.d.] 31 p. ((Bulletin G-7).**

Folder 45.10 ***Steam jet air pumps,*** **Wheeler Condenser & Engineering Company, Carteret, N.J., 1922.**

Physical Description: 39 p.

Folder 45.11 ***The reciprocating dry-vacuum pump,*** **by Walter S. Weeks and Pierre E. Letchworth, ASME, 1928. (FSP-50-43).**

COMPRESSIBLE FLOW

Box Box 9, Folder 46.1 ***Notes on the one-dimensional theory of compressible flow in pipes,*** **by W. Goldsmith, [n.p., n.d.]**

Physical Description: 13 l.

Folder 46.2 ***Das feld einer Raschbewegten Schallquelle,*** **by Nikolaus Rott, Mitteilungen aus dem Institut für Aerodynamik, Zurich, 1945. 87 p. (No.9)**

Folder 46.3 ***Ueber die Verwendung von leichten Gasen für Wärmekraftmaschinen mit geschlossenem Kreislauf,*** **von J. Ackeret, sonderdruck aus der *Schweiz Bauzeitung,* Bd. 127, S. 51, 1946.**

Physical Description: 2 p.

Folder 46.4 ***Zur Theorie der Raketen,*** **von J. Ackeret, *Helvetica Physica Acta,* Vol. XIX, 1946. pp.103-112.**

Leonhard Eulers letzte Arbeit, **von J. Ackeret, 1945.**

Folder 46.5 ***The work of the Imperial College, Engineering,*** **Nov. 23, 1945. pp.415-416.**

Folder 46.6 ***The formation and stability of normal shock waves in channel flows,*** **by Arthur Kantrowitz, National Advisory Committee for Aeronautics, Washington, D.C., March 1947. 41 p. (Technical note no. 1225)**

Folder 46.7 ***Fluid mechanics,*** **University of California, Department of Engineering, [n.d.] 19 p. (HYD-481)**

Folder 46.8 ***The subsonic and supersonic two dimensional flow fields about slender bodies,*** **by E.V. Laitone, Cornell Aeronautical Laboratory, July 1946.**

Physical Description: 19 l.

Folder 46.9 ***The subsonic flow about a body of revolution,*** **by E.V. Laitone, reprinted from *Quarterly of Applied Mathematics,* Vol. 5, No.2, July 1947. pp.227-231.**

Folder 46.10 ***The supersonic flow about a body of revolution,*** **by E.V. Laitone, Cornell Aeronautical Laboratory, Oct. 1946.**

Physical Description: 7 p. (typescript)

Folder 46.11 ***The subsonic and supersonic flow about an inclined body of revolution,*** **by E.V. Laitone, Cornell Aeronautical Laboratory, December 1946.**

Physical Description: 7 l. (typescript)

Folder 46.12 ***The limiting line and its relation to the critical Mach number,*** **by Hideo Yoshihara, Headquarters Air Materiel Command, Dayton, Ohio, Nov. 1947.**

Physical Description: 16 p.

Folder 46.13 ***Phenomena in supersonic diffusers,*** **by Heinrich Ramm, Headquarters Air Materiel Command, Dayton, Ohio, Nov. 1947.**

Physical Description: 20 p.

Folder 46.14 ***50 miles straight up, Douglas Airview*** **[n.p., n.d.]**

Physical Description: p.8.

Folder 46.15 ***Compressible flows obtainable from two-dimensional flows through the addition of a constant normal velocity,*** **by H. Poritsky, *Journal of Applied Mechanics,* March 1946. pp.61-65.**

Folder 46.16 ***Significance of the Reynolds criterion in the gas-theory,*** **[n.p., n.d.]**

Physical Description: 2 p.

Folder 46.17 ***Analyzing airflow... with schlieren and shadowgraph equipment; theory and operation of both methods,*** **by N.F. Barnes and S.L. Bellinger, *General Electric Review,* Dec. 1944. pp.27-36.**

Folder 46.18 ***Theory of the nonstationary gas flow III: Laminar flow in tubes of variable cross section in particular spherical and cylindrical waves,*** **by Sauer, Headquarters Air Materiel Command, Dayton, Ohio, Feb. 1947.**

Physical Description: 54 p.

Folder 46.19 ***Discussion of 'Compressible flows obtainable from two-dimensional flows through the addition of a constant normal velocity'*****, by John Giese, *Journal of Applied Mechanics,* March 1947. pp.74-76.**

Folder 46.20 ***The one-dimensional theory of steady compressible fluid flow in ducts with friction and heat addition,*** **by Bruce L. Hicks, Donald J. Montgomery, and Robert H. Wasserman, National Advisory Committee for Aeronautics, Washingtin, D.C., July 1947. 26 p. (Technical note no. 1336).**

Folder 46.21 ***The linearized subsonic and supersonic flow about inclined slender bodies of revolution,*** **by E.V. Laitone, reprinted from the *Journal of the Aeronautical Sciences,* Vol.14, No.11, Nov.1947. pp.631-642.**

Folder 46.22 ***Nozzles for supersonic flow without shick fronts,*** **by Ascher H. Shapiro, *Journal of Applied Mechanics,* 1943.**

Physical Description: 7 p.

Folder 46.23 ***The initial shock in a local region of supersonic flow,*** **by E.V. Laitone, Cornell Aeronautical Laboratory, April 1946.**

Physical Description: 15 l. (typescript)

Folder 46.24 ***Exact and approximate solutions of oblique shock flow,*** **by E.V. Laitone, Cornell Aeronautical Laboratory, 1946.**

Physical Description: 50 l.

Folder 46.25 ***High speed aircraft developments,*** **by E.H. Heinemann, presented before the American Society of Mechanical Engineers, May 28, 1947.**

Physical Description: 37 l.

Folder 46.27 ***Calculation of the curvatures of attached shock waves,*** **by T.Y. Thomas, reprinted from *Journal of Mathematics and Physics,* Vol.27, No.4, Jan. 1949. pp.279-297.**

Folder 46.28 ***Mitteilungen aus dem Institut für Aerodynamik,*** **Eidgenössische Technische Hochschule Zurich, 1943. 72 p. (No.8)**

Folder 46.29 ***Untersuchungen an Verdichtungsstöffen und Grenzschichten in schnell bewegten Gasen,*** **by J. Ackeret, F. Feldmann and N. Rott, *Mitteilungen aus dem Institut für Aerodynamik,* Zurich, 1946. 56 p. (NO.10).**

Folder 46.30 ***The subsonic and supersonic flow fields of slender bodies,*** **by E.V. Laitone, Cornell Aeronautical Laboratory, Sept. 1946.**

Physical Description: 7+ l. (typescript)

Folder 46.31 **[Miscellaneous papers and articles re compressible flow in pipes.]**

Physical Description: 1 notebook.

Folder 46.32 ***Some comparisons between compressible and incompressible treatments of compressible fluids,*** **by R.P. Benedict, *Transactions of ASME,* Jan.1964.**

Physical Description: 10 p.

TURBULENCE

Box Box 9, Folder 47.1 ***Laws of turbulent flow in open channels,*** **by Garbis H. Keulegan, National Bureau of Standards, December 1938. pp.707-741. (Research paper RP1151)**

Folder 47.2 ***Linearity of friction in open channels,*** **by H.A. Einstein and R.B. Banks, Association Internationale d'Hydrologie Scientifique, 1951. pp.488-498.**

Folder 47.3 ***Rectangular artificial roughness in open channels,*** **by J.W. Johnson, reprinted from *Transactions of the American Geophysical Union,* 1944. pp.906-914.**

Folder 47.4 ***Experiments on eddy-diffusion and suspended-material transportation in open channels,*** **by A.A. Kalinske and C.L. Pien, reprinted from *Transactions of the American Geophysical Union,* 1943. pp.530-536.**

Folder 47.5 ***Temperature gradients in turbulent gas streams; preliminary studies,*** **by W.H. Corcoran, B. Roudebush and B.H. Sage, reprinted from *Chemical Engineering Progress,* March 1947, Vol. 43, No.3. pp.135-142.**

Folder 47.6 ***On dimensional analysis and the presentation of data in fluid-flow problems,*** **by E.R. Van Driest, *Journal of Applied Mechanics,* Vol.13, No.1, March 1946. pp.34-40.**

Folder 47.7 ***Shear transmission from a turbulent flow to its viscous boundary sub-layer,*** **by H.A. Einstein and Huon Li, [n.p., n.d.]**

Physical Description: 16 p.

Folder 47.8 ***Experimental investigation of turbulence diffusion - a factor in transportation of sediment in open-channel flow,*** **by E.R. Van Driest, *Journal of Applied Mechanics,* Vol.12, No.2, June 1945. pp.91-100.**

Folder 47.9 ***Instrument for measuring the wall shearing stress of turbulent boundary layers,*** **by H. Ludwieg, National Advisory Committee for Aeronautics, Washington, D.C., May 1950. 22 p. (Technical memorandum 1284).**

Folder 47.10 ***Fluctuating components of velocity in non-isotropic turbulent pipe flow,*** **by Paul E. Rosenthal, for ME131B, University of California, June 1948.**

Physical Description: 59 l.

Folder 47.11 ***Turbulence and energy dissipation,*** **by A.A. Kalinske, *Transactions of the A.S.M.E.,* January 1941. pp.41-48.**

Folder 47.12 ***The analogy between fluid friction and heat transfer,*** **by Th. Von Karman, *Transactions of the A.S.M.E.,* September 1939.**

Physical Description: 6 p.

Folder 47.13 ***Transportation of silt,*** **Chapter VIII, University of California, Division of Civil Engineering, HY-40, [n.d.]**

Physical Description: 28 l.

Folder 47.14 ***Mixing and equilibrium in pipe flow,*** **by Willis H. Carrier and W. Stuart Misener, American Society of Mehcanical Engineers, May 1953. 11+ l. (Paper no.53-S-44).**

ADDED MASS

Box Box 9, Folder 48.1 **[Bibliography from *Acceleration of bodies in fluids - a study of virtual mass,* by Thomas E. Stepon, 1955.]**

Physical Description: 5 l.

Folder 48.2 ***The kinetic energy of a body of revolution moving in an infinite fluid,* by Carl Kaplan, *Jounral of the Aeronautical Sciences,* Vol.3, No.11, September 1936. pp.381-384.**

Folder 48.3 ***The computation of the apparent mass of dirigibles,* by Max M. Munk, *J. Ae. S.,* Vol.2, May 1935. pp.97-100.**

Folder 48.4 ***Resistance coefficients for accelerated and decelerated flows through smooth tubes and orifices,* by J.W. Daily, et al, American Society of Mechanical Engineers, New York, April 1956. 13 p. (Paper no.55-SA-78)**

Folder 48.5 ***Drag forces on an accelerated cylinder,* by A.D.K. Laird and C.A. Johnson, University of California, Berkeley, 1955.**

Physical Description: 7+ l.

Folder 48.6 ***The transverse force and moment on a three dimensional body,* by E.V. Laitone, [np., n.d.]**

Physical Description: 10 l.

Folder 48.7 ***Fluid resistance to accelerating ships,* by Ralph Balent, [n.p.] August 1944.**

Physical Description: 33 p. (handwritten)

Folder 48.8 **a) *The determination and correlation of the virtual mass of ship models,* by James Peter Murphy, unpublished thesis (MS.), University of California, Berkeley, April 1937.**

Physical Description: 97 p. (typescript)

b) [Figures to accompany 48.8a.]

Folder 48.9 ***On the flow impulses (in an infinitely extending fluid) which are not determinable,* by Tollurieson [n.p.] February 1950.**

Physical Description: 9 l. (typescript)

Folder 49.1 ***Virtual mask of disks,* by Ralph Balent, ME299, University of California, 1949, [data book and computations].**

Physical Description: 49 p.

Folder 49.3 ***A new concept of the theory of virtual mass with calibration of the 110-foot towing tank and investigation of wavemaking resistance of submerged bodies,* by Thomas Pleasant Faulconer, M.E.199, University of California, June 1940.**

Physical Description: 117 l.

Folder 49.2 **[Some data and notes on attempts at correlation in terms of AD/V2, n.p., n.d.]**

Physical Description: 1 folder (handwritten)

PULSATING FLOW STUDIES

Box Box 9, Folder 50.1 ***Effect of pulsations on flow of gases,*** **by Horace Judd and Donal B. Pheley, The *Ohio State University Bulletin,* Vol.27, No.15, March 14, 1923.**

Physical Description: 112 p.

Folder 50.2 **[References on pulsations; separate index cards. n.d.]**

Folder 50.3 ***Attenuation of surges in long pipe lines,*** **by Milton Ludwig, American Society of Mechanical Engineers, New York, Aug.1950. 13 p. (Paper no.50-SA-26)**

Folder 50.4 ***Experimentelle untersuchung des einflusses von pulsationen auf den Strömungswiderstand von Kreisrohren und die Durchflußsahl von Normdüsen,*** **by Ernst Estel, *Zentralblatt fur Mechanik,* Vol.6, No.5, November 2, 1937. (Translation by E.B. Barnes.)**

Physical Description: 15 p.

Folder 50.5 ***The effect of pulsations on orifice and nozzle coefficients,*** **by Robert L. O'Bryan, for M.E.219, University of California, Department of Mechanical Engineering, May 14, 1938.**

Physical Description: 13 p.

Folder 50.6 **[Indication cards on pulsating flow, for M.E. 131B, University of California, Berkeley. n.d.]**

Physical Description: 1 envelope.

Folder 50.7 ***Methods of measuring large volumes of natural gas,*** **by J.E. Overbeck and S.R. Beitler, [n.d.] 1939.**

Physical Description: 12 p.

Folder 50.8 ***Discharge measurement with pulsating flow: theoretical basis for determining the error and service tests,*** **by Fritz Herning and Christoph Schmid, translated from *Zeitschrift des Vereines deutscher Ingenieure,* 82, pp.1107-1114.**

Physical Description: 11 p.

Folder 50.9 **[Handwritten ME131B report, titled *M-659*, initialed C.F.C., March 26, 1937.]**

Physical Description: 1 folder (unpaged)

Folder 50.10 ***Preliminary report on the effect of pulsations on orifice coefficients,*** **by R.L. O'Bryan, for M.E. 219, University of California, Berkeley, August 30, 1937.**

Physical Description: 1 folder (unpaged)

Folder 50.11 ***Pulsating flow,*** **by R.L. O'Bryan, M.E. 219, University of California, Berkeley, 1937-1938. 1 v. (unpaged) (HE-49)**

Folder 50.12 ***Effect of pulsation on coefficient of discharge,*** **by Willard Knupp, et al., for M.E.131B, University of California, Berkeley, April 1938.**

Physical Description: 1 v. (unpaged, part.handwritten)

Folder 50.13 ***Uker Gasmesgenmessung bei Kolbenmaschinen Mittels Dusen u Blenden,*** **by O. Lutz, May 1932.**

Physical Description: 1 v. (handwritten)

LOSSES IN FLUID FLOW

Box Box 9, Folder 51.1 ***Flow of liquids in pipes of circular and annular cross-sections,*** **by Alonzo P. Kratz, Horace J. MacIntire, and Richard E. Gould, *University of Illinois Bulletin,* Vol.XXVIII, No.29, March 17, 1931.**

Physical Description: 28 p.

Folder 51.2 ***An investigation of losses of flow stream mechanical energy at abrupt changes in flow corss section,*** **by W.M. Kays, Stanford University, Department of Mechanical Engineering, Sept.1948. 81 l. (Technical report no.1)**

Folder 51.3 ***Guide vanes for deflecting fluid currents with small loss of energy,*** **by G. Kröber, N.A.C.A., [n.d.] 2 p. (handwritten) (T.M. no.722)**

Folder 51.4 ***New data for the design of elbows in duct systems,*** **by Loring Wirt, reprinted from *General Electric Review,* June 1927. pp.286-296.**

Folder 51.5 ***Effect of screens in wide-angle diffusers,*** **by G.B. Schubauer and W.G. Spangenberg, National Advisory Committee for Aeronautics, Washington, D.C., 1949. 40 p. (Report 949)**

Folder 51.6 ***Boundary layer flow in the corner of a diffuser,*** **by J.B. Jones and R.C. Binder, Purdue University, Engineering Experiment Station, Lafayette, Indiana, 1952. 39 p. (Research series no.115)**

Folder 51.7 **a) *Tests on the hydraulics and pneumatics of house plumbing,* by Harold E. Babbitt, *University of Illinois Bulletin,* Vol.XXI, No.47, July 21, 1924.**

Physical Description: 80 p.

b) *Tests on the hydraulics and pneumatics of house plumbing, Part II,* by Harold E. Babbitt, *University of Illinois Bulletin,* Vol.XXV, No.46, July 17, 1928.

Physical Description: 64 p.

Folder 51.8 ***Use of a consolidated porous medium for measurement of flow rate and viscosity of gases at elevated pressures and temperatures,*** **by Martin B. Biles and J.A. Putnam, National Advisory Committee for Aeronautics, Washington, D.C., Sept.1952. 51 p. (Technical note 2783)**

Folder 51.9 ***Conversion of kinetic to potential energy in flow expansions,*** **by A.A. Kalinske, American Society of Civil Engineers *Papers,* Dec.1944. pp.1545-1564.**

Folder 51.10 ***Solving problems of gas pipe line design by use of significant factors,*** **by C.L. Brockschmidt and M.K. Hager, *The Petroleum Engineer,* Dec.1944. pp.142-164.**

Folder 51.11 ***Vaporization inside horizontal tubes,*** **by W.H. McAdams, W.K. Woods, and R.L. Bryan, *Transactions of the ASME,* January 1941.**

Physical Description: 7 p.

Folder 51.12 ***Long-distance natural-gas-transmission pipe lines,*** **by J.J. King, *Mechanical Engineering,* Vol.73, No.7, July 1951. pp.545-548.**

Folder 51.13 ***An approximate formula for pipe friction factors,*** **by Lewis F. Moody, *Mechanical Engineering,* Vol.69, No.12, December 1947. pp.1005-1006.**

Folder 51.14 ***Purpose and use of friction chart,*** **Bayley Blower Company, [n.p.]November 25, 1930.**

Physical Description: 2 p.

Folder 51.15 ***Design and construction of Pacific Gas and Electric Company's 34-inch gas line,*** **by John J. Pugh, Ray L. Hamilton, and Richard Finnie, for presentation at the ASME 1952 Spring Meeting, March 24-26, 1952.**

Physical Description: 9 l.

Folder 51.16 ***An electrical analyzer for pipeline networks, Western Industry,*** **November 1951. pp.66-67.**

Folder 51.17 ***On steady flow formulae in pipes and channels,*** **by S. Irmay, International Association for Hydraulic Structures Research, Sept.1949.**

Physical Description: 11 p.

Folder 51.18 ***Solution of special problems in pipe flow by graphical analysis,*** **by Grant K. Palsgrove, Rensselaer Polytechnic Institute *Bulletin,* No.37, August 1932.**

Physical Description: 29 p.

Folder 51.19 ***Fluid highways, I: Piping elements, Power,*** **December 1937. pp.61-83.**

Folder 51.20 ***Fluid highways, II: Piping systems, Power,*** **December 1937. pp.44-57.**

TURBULENCE AND BOUNDARY LAYER

Box Box 10, Folder 52.1 ***Diffusion by continuous movements,*** **by G.I. Taylor, London Math. Soc. Proc. Series 2 v. 20, 1921-22.**

Physical Description: 17 l. (typescript)

Folder 52.2 ***Theorie de l'Ecoulement turbulent, point de vue d'un ingenieur aux irrigations de l'inde,*** **by T. Blench, *La Houille Blanche,* No. 3, May 1946. pp.163-179.**

Folder 52.3 ***Shear flow past a circular cylinder in an incompressible fluid of small viscosity,*** **by Robert Duffy and Ting Y. Li, Rensselaer Polytechnic Institute, Troy, N.Y., October 1957. 29 p. (TN-57-715)**

Folder 52.4 ***Nocturnal wind-velocity, eddy-stability, and eddy-diffusivity above a citrus orchard,*** **by R.A. Kepner, L.M.K. Boelter and F.A. Brooks, reprinted from *Transactions of American Geophysical Union,* 1942. pp.239-249.**

Folder 52.5 ***Analytical interpretation of density-currents of air chilled by nocturnal radiation,*** **by F.A. Brooks and W.P. Berggren, reprinted from *Transactions of the American Geophysical Union,* 1943. pp.189-204.**

Folder 52.6 ***Theory of heat transfer in smooth and rough pipes,*** **by G.D. Mattioli, [n.p.] 1942.**

Physical Description: 16 l. (typescript)

Folder 52.7 ***Heat transfer through turbulent friction layers,*** **by H. Reichardt, translated by L.M.K. Boelter, from *Zeitschrift für Angewandte Mathematik und Mechanik Ingenieurwissenschaftliche Forschungsarbeiten,* Band 20, Heft 6, 21, Dec. 1940.**

Physical Description: 42 l.

Folder 52.8 **"Lecture series, *Boundary Layer Theory,* Part II - Turbulent flows," by H. Schlichting, National Advisory Committee for Aeronautics, Washington, D.C., April 1949. 136 p. (Technical memorandum no. 1218)**

Folder 52.9 ***Theses presentees a la faculte des Sciences de Toulouse pour obtenir le titre d'ingenieur-docteur,*** **by M.L. Castagnetto, 1939.**

Physical Description: 82 p.

JET DIFFUSION

Box Box 10, Folder 53.1 **[Bibliography on jets - mixing and turbulence, n.p., n.d.]**

Physical Description: 7 p.

Folder 53.2 ***Diffusion of submerged jets,*** **by M.L. Albertson, et al., American Society of Civil Engineers, New York, reprinted from *Transactions,* Vol. 115, 1950. pp.639-697.**

Folder 53.3 ***Transfer of momentum in jet of air issuing into a tube,*** **by L.G. Alexander, et al, University of Illinois, Engineering Experiment Station, Urbana, May 1952.**

Physical Description: 50 p.

Folder 53.4 ***Simultaneous transport of heat and momentum in a ducted jet,*** **by L.G. Alexander and A. Kivnick, University of Illinois, Engineering Experiment Station, August 1952. 23 p. (Technical report no.12)**

Folder 53.5 ***An ad hoc theory of free turbulent jets,*** **by L.G. Alexander, University of Illinois, Engineering Experiment Station, Urbana, August 1952. 21 p. (Technical report no.13)**

Folder 53.6 ***Studies on a non-isothermal jet discharging into a duct,*** **by A. Kivnick and E.D. Henze, University of Illinois, Engineering Experiment Station, Urbana, Dec.1951. 27 l. (Technical report no.CML-1)**

Folder 53.7 ***Application of the Reichardt hypothesis to the transport of momentum and mass in coaxial jets,*** **by Arnold Kivnick, University of Illinois, Engineering Experiment Station, Urbana, June 1952. 40 p. (Technical report no. CML-2)**

Folder 53.8 ***Mixing of high-velocity air jets,*** **by T. Baron and E.H. Bollinger, University of Illinois, Engineering Experiment Station, Urbana, March 1952. 101 l. (Technical report no.CML-3)**

Folder 53.9 ***The coalescence of droplets in a turbulent jet,*** **by Arnold Kivnick, University of Illinois, Engineering Experiment Station, August 1952. 25 p. (Technical report no.CML-4)**

Folder 53.10 ***Dynamics of free turbulence,*** **by Thomas Baron, University of Illinois, Engineering Experiment Station, November 1948. 21 l. (Technical report no.1)**

Folder 53.11 ***Turbulent mixing in an isothermal free jet,*** **by J.F. Taylor, H.L. Grimmett, and E.W. Comings, University of Illinois, Engineering Experiment Station, November 1948. 32 l. (Technical report no.2)**

Folder 53.12 ***The velocity field in an isothermal turbulent free jet adjacent to the source,*** **by L.G. Alexander, University of Illinois, Engineering Experiment Station, November 1948. 10 l. (Technical report no.3)**

Folder 53.13 ***Atomization of liquid jets and droplets,*** **by Thomas Baron, University of Illinois, Engineering Experiment Station, Feb.1949. 24 l. (Technical report no.4)**

Folder 53.14 ***Isothermal free jets of air mixing with air,*** **by J.F. Taylor, H.L. Grimmett, and E.W. Comings, University of Illinois, Engineering Experiment Station, Feb.1950. 18 l. (Technical report no.6)**

Folder 53.15 ***Ricerca sperimentale sulla diffusione di una vena liquida effluente in un campo di liquido in quiete (Prima serie di prove),*** **by Duilio Citrini, estratto dal Fascicolo VIII, Agosto 1946, della rivista mensile *L'energia Elettrica.***

Physical Description: 16 p.

Folder 53.16 ***Jet mixing of two liquids,*** **by R.G. Folsom and C.K. Ferguson, *Transactions of the ASME,* January 1949. pp.73-77. [Folder also includes correspondence.]**

Folder 53.17 ***Experimental investigation of critical submergence for vortexing in a vertical cylindrical tank,*** **by E. Kent Springer and F.M. Patterson, American Society of Mechnical Engineers, New York, April 1970. 8 p. (Publication no.69-FE-49)**

Folder 54.1 ***Jet stability,*** **[n.p., n.d.]**

Physical Description: 11 l. (mimeo)

Folder 54.2 ***The diffusion of a hot air jet in air in motion,*** **by W. Szablewski, National Advisory Committee for Aeronautics, Washington, D.C., Dec.1950. 92 p. (Technical memorandum 1288) (Translation of *Die Ausbreitung eines Heissluftstrahles in Bewegter Luft,* GDC/2460, Sept.1946.)**

Folder 54.3 ***Hydrodynamics in modern technology,*** **symposium held on the occasion of the dedication of the Hydrodynamics Laboratory and Ship Model Towing Tank, Massachusetts Institute of Technology, Hydrodynamics Laboratory, June 1951.**

Physical Description: 164 p.

Folder 54.4	***Turbulence-intensity measurements in a jet of air issuing from a long tube,*** **by Barney H. Little, Jr., and Stafford W. Wilbur, National Advisory Committee for Aeronautics, Washington, D.C., May 1951. 30 p. (Technical note 2361)**
Folder 54.5	***Transfer of heat and matter in the turbulent mixing zone of an axially symmetrical jet,*** **by J.O. Hinze and B.G. van der Heggezijnen, *Appl. Sci. Res.,* Vol.AI, pp.435-462, 1958.**
Folder 54.6	***A theoretical and experimental investigation of jet-augmentation,*** **by John G. Wilder, Jr., Curtiss-Wright Corporation, Aerodynamics Department, Sept.1945.** **Physical Description:** 43 p.
Folder 54.7	***The application of bundary-layer theory to swirling liquid flow through a nozzle,*** **by A.M. Binnie and D.P. Harris, *Quart. Journ. Mech. and Applied Math.,* Vol.III, Pt.1, 1950. pp.89-106.**
Folder 54.8	***Theoretical analysis of various thrust-augmentation cycles for turbojet engines,*** **by Bruce T. Lundin, National Advisory Committee for Aeronautics, Washington, D.C., 1950. 17 p. (Report 981)**
Folder 54.9	***Further experiments on the flow and heat transfer in a heated turbulent air jet,*** **by Stanley Corrsin and Mahinder S. Uberoi, National Advisory Committee for Aeronautics, Washington, D.C., 1950. 16 p. (Report 998)**
Folder 54.10	***Investigation with an interferomenter of the turbulent mixing of a free supersonic jet,*** **by Paul B. Gooderum, George P. Wood, and Maurice J. Brevoort, National Advisory Committee for Aeronautics, Washington, D.C., 1950. 17 p. (Report 963)**
Folder 54.11	***Laminar mixing of a compressible fluid,*** **by Dean R. Chapman, National Advisory Committee for Aeronautics, Washington, D.C., 1950. 7 p. (Report 958)**
Folder 54.12	***Fluctuations in a spray formed by two impinging jets,*** **by Marcus F. Heidmann and Jack C. Humphrey, National Advisory Committee for Aeronautics, Washington, D.C., April 1951. 35 p. (Technical note 2349)**
Folder 54.13	***A general correlation of temperature profiles downstream of a heated-air jet directed perpendicularly to an air stream,*** **by Edmund E. Callaghan and Robert S. Ruggeri, National Advisory Committee for Aeronautics, Washington, D.C., Sept. 1951. 37 p. (Technical note 2466)**
Folder 54.14	***Preliminary study of stability of flow from two ducts discharging into a common duct,*** **by Albert I. Bellin, D. Richard Messina and Paul B. Richard, National Advisory Committee for Aeronautics, Washington, D.C., July 1951. 33 p. (Technical note 2417)**
Folder 54.15	***Theoretical and experimental investigation of the mixing of a supersonic stream with an induced secondary stream as applied to ducted propulsive devices (Parts I and II),*** **by H.L. Pool and J.V. Charyk, Princeton University, Sept.1950. 57 p. (U.S. Navy and U.S. Air Force, Project Squid Technical report no.25)**
Folder 54.16	***Flow in ejectors driven by supersonic jets,*** **by K. Dexter Miller, Jr. Princeton University, May 1948. 40+ p. (U.S. Navy Project Squid, Technical memorandum no.Pr-3)**

FLOW MEASUREMENT STANDARDS

Box Box 10, Folder 60.1 ***History of orifice meters and the calibration, construction, and operation of orifices for metering,*** **report of the Joint A.G.A.-A.S.M.E. Committee on Orifice Coefficients, 1935.**

Physical Description: 63 p.

Folder 60.2 ***Fluid meters; their theory and application, Part I,*** **report of A.S.M.E. Special Research Committee on Fluid Meters (4th ed.), 1937.**

Physical Description: 139 p.

Folder 60.3 **"Flow measurement, 1940: Information on instruments and apparatus, Part 5 - Measurement by means of standardized nozzles and orificie plants," American Society of Mechanical Engineers, New York, 1940.**

Physical Description: 64 p.

Folder 60.4 ***Proceedings of the Petroleum Fluid Metering Conference,*** **American Society of Mechanical Engineers, April 1938.**

Physical Description: 78 p.

Folder 60.5 ***Proceedings of the Petroleum Fluid Metering Conference,*** **American Society of Mechanical Engineers, April 1940.**

Physical Description: 64 p.

FLOW METERING STANDARDS

Box Box 10, Folder 61.1 ***Flowmeter research and the ASME,*** **by S.R. Beitler, *Mechanical Engineering,* Vol.72, No.5, May 1950. pp.376-378.**

Folder 61.2 ***American standard letter symbols for hydraulics,*** **prepared by Sectional Committee on Letter Symbols and Abbreviations for Science and Engineering, American Standards Association, January 1942.**

Physical Description: 90 p.

Folder 61.3 ***History of the development, manufacture, and calibration of H.E.I. Standard flow nozzles,*** **by Howard S. Bean, W.H. Reynolds and Rawleigh M. Johnson, Heat Exchange Institute, New York, 1946.**

Physical Description: 15 p.

Folder 61.4 ***Tables for computation of air flow through H.E.I. Standard flow nozzles,*** **by Philip Freneau and Riley Crippen, Heat Exchange Institute, New York, 1945.**

Physical Description: 22 p.

Folder 61.5 **[Folder containing: *Code for the measurement of water using standard ISA orifices with free discharge,* by M.P. O'Brien and R.G. Folsom, 1939;**

Physical Description: photographs, blueprints.]

Folder 61.6 ***Standards for discharge measurement with standardized nozzles and orifices, German Industrial Standard 1952, 4th edition,*** **National Advisory Committee for Aeronautics, Sept.1940. 62 p. (Technical memorandum no.952)**

Folder 61.7 ***Recent flow measurements applied to the standardization of nozzles and orifices,*** **by Rudolf Witte, translated from *Forschung, 5,* 205-211, 1934 (Nov.1934).**

Physical Description: 9 l.

Folder 61.8 ***Regeln für die durchflussmessung mit genormten düsen und blenden, VDI-*** **Durchflussmesserregeln, din 1952, Berlin, 1935.**

Physical Description: 22 p.

Folder 61.9 **"Regeln für wassermengen-messungen bei abnahme von wasserkraftmaschinen ' *VDI-* Wassermengenmessregeln'", Berlin, 1936.**

Folder 61.10 **[Folder containing: ISA Bulletin 9, *Regles pour la Mesure des Debits des Fluides par Tuyeres et Diaphragmes* ; ISA Bulletin 12, same title; December 1935 and August 1936 respectively.]**

Folder 61.11 ***Standards for discharge measurement with standardized nozzles and orifices, German Industrial Standard 1952,*** **[n.p.] January 1937.**

Folder 61.12 ***The coefficients of standard nozzles and standard orifices at entrance and discharge,*** **by E. Stach, *VDI,* Bd.78, No.6, Feb.10, 1934. pp.187-189.**

Folder 61.13 ***Code for the measurement of water using standard I.S.A. orifices with free discharge,*** **Berkeley, Calif., April 24, 1937.**

Physical Description: 13 l.

Folder 61.14 ***Orifice metering of natural gas,*** **American Gas Association, Gas Measurement Committee, New York, April 1955. 94 p. (Report no.3)**

Folder 61.15 ***Review of the pitot tube,*** **by R.G. Folsom, prepared for the Fluid Meters Research Committee of ASME at meeting in Chicago, Ill., Nov.14-18, 1955.**

Physical Description: 51 p.

Folder 61.16 ***Large diameter orifice meter rube tests,*** **American Gas Association, May 1954.**

Physical Description: 31 p.

Folder 61.17 **"ASME-API code for installation, proving and operation of positive displacement meters in liquid hydrocarbon service, *or* Petroleum P.D. meter code," American Petroleum Institute, July 1946.**

Physical Description: 34 p.

METERING-ORIFICES

Box Box 10, Folder 62.1 ***Modified I.S.A. orifice with free discharge,*** **by M.P. O'Brien, and R.G. Folsom,** ***Transactions of the ASME,*** **Vol.59, No.1, Jan.1937. pp.61-64.**

Folder 62.2 ***Code for the measurement of water using standard ISA orifices with free discharge,*** **by M.P. O'Brien, Berkeley, Calif., Aug.1937.**

Folder 62.3 ***The discharge coefficient of standard orifices and their dependence on the length of the edge,*** **by G. Ruppel,** ***VDI,*** **1937.**

Folder 62.4 ***A study of the coefficnets of discharge of circular submerged orifices in pipe lines,*** **by Alexander M. Dickie and Howard A. Evans, University of California, Dec.1928.**

Physical Description: 11 l. (handwritten)

Folder 62.5 ***The flow of fluids through orifices in six-inch pipes,*** **by S.R. Beitler and Paul Bucher,** ***Transactions of A.S.M.E,*** **Dec.1929.**

Physical Description: 11 p.

Folder 62.6 ***Fluid flow through two orifices in series-II,*** **by Milton C. Stuart and D. Robert Yarnall,** ***Transactions of the A.S.M.E.,*** **Vol.66, No.5, July 1944. pp.387-395.**

Folder 62.7 ***Hydraulic experiments with valves, orifices, hose, nozzles, and orifice buckets,*** **by Arthur N. Talbot, et al.,** ***University of Illinois Bulletin,*** **Vol.XV, No.37, May 13, 1918.**

Physical Description: 80 p.

Folder 62.8 ***Pressure reduction on the face of orifice plates and weirs,*** **by Charles William Harris,** ***Bulletin*** **[of the] University of Washington, Engineering Experiment Station, March 1926. 27 p. (Bulletin no.35)**

Folder 62.9 ***Some observations of flow phenomena in nozzles and orifices,*** **by P. Jordan, [n.p., 1939].**

Folder 62.10 ***Comitato per l'ingegneria,*** **estratto da** ***La recerca scientifica,*** **Anno X, no.10, Oct.1939. p.966.**

Box Box 11, Folder 62.11 **[Folder containing material in re orifices, effect of temperature, including:** ***Orifices-effect of temperature,*** **by H. Smith, Jr.;** ***Experiments on the discharge of water of different temperatures,*** **by J.C. Mair;** ***The influence of temperature on the discharge of water from an orifice in the hemispherical bottom of an open topped cylindrical vessel,*** **by Isherwood, 1878.]**

Physical Description: 1 v. (handwritten and typescript)

Folder 62.12 ***The coefficients of standard nozzles and orifices at the entrance and exit of pipes,*** **by E. Stach, VDI, 1934.**

Physical Description: 3 p.

Folder 62.13 ***Tests on efflux measurement with sharp-edged orifices,*** **by W. Schultes, K. Jaroschek, and H. Werkmeister, VDI, Berlin, 1938.**

Physical Description: 14 l. (typescript)

Folder 62.14 ***Impact pressure in front of diaphragm quantity meters,*** **by F. Engel, translated by E.B. Barnes, from** ***Die Wärme, Geitschrift für Dampfkessel und Maschinenbetrich,*** **60th Annual Series, No.26, June 26, 1937.**

Physical Description: 8 l. (typescript)

Folder 62.15 ***Influence du lib re parcours sur l'ecoulement d'un gaz a la vitesse du son a travers un orifice,*** **by Leon Agostini,** ***Publications Scientifiques et Techniques,*** **Paris, 1940. 74 p. (No.214).**

Folder 62.16 **[Articles and abstracts on orifices. 1928.]**

Physical Description: 1 folder.

Folder 62.17 ***Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic,*** **by H.A. Johnson, J.P. Hartnett, and L. Fried,** ***Transactions of the ASME,*** **July 1956. 5 p. (Paper no.56-SA-16)**

Folder 62.18 ***See*** **62.5**

Folder 62.19 ***Effect of a globe valve in approach piping on orifice meter accuracy,*** **by J.W. Murdock, C.J. Faltz, and C. Gregory, Jr., American Society of Mechanical Engineers, New York, Oct.1955. 6 p. (Paper no.54-A-122)**

Folder 62.20 ***The double orifice,*** **by G. Walzholz, VDI, 1936.**

Physical Description: 9 l.

Folder 62.21 ***Velocity profile effects on the discharge coefficient of pressure differential meters,*** **by A.G. Ferron, American Society of Mechanical Engineers, New York, March 1963. 8 p. (Paper no.62-HYD-8)**

Folder 62.22 ***Flow metering of molten lead-bismuth eutectic at University of California,*** **by R.A. S-ban, W.T. Schrank, and D. Bartz, April 1949.**

Physical Description: 5 l.

Folder 62.23 ***Plate roughness effect on the discharge of orifices and weirs,*** **by Joseph Perlmutter and W.E. Dixon, University of California, June 1945.**

Physical Description: 21 p.

Folder 62.24 ***Prove su boccagli e diaframmi normalizzati inseriti in condotte da 200 mm,*** **by Ettore Scimemi, estratto dal *L'energia elettrica,* Fascicolo VII, Vol.XIII, 1936.**

Physical Description: 11 p.

Folder 62.25 ***Considerazioni sulle perdite di carico dovute a bocchelli e diaframmi di misura,*** **by Mario Marchetti, *Memorie e studi,* Istituto di Idraulica e Costrusioni Idrauliche, Milano, 1953. 8 p. (No.100)**

Folder 62.26 **"Prove di controllo sul funzionamento idraulico dei diaframmi e dei boccagli normalizzati isa (1934), " by Mario Marchetti, *Memorie e studi,* dell' Istituto di Idraulica e Costruzioni Idrauliche, Milano, 1936. 16 p. (No.14)**

Folder 62.27 ***Effect of mechanical vibration on the water flow through a 1/4-inch sharp-edged concentric ASME orifice in a 1-inch pipe,*** **by C.B. Haughton, Jr. and R.E. Gorton, American Society of Mechanical Engineers, Oct.1955. 6 p. (Paper no. 54-A-113)**

Folder 62.28 ***Purdue University, School of Civil Engineering derivation of coefficients of orifices,*** **by W.E. Howland and J.D. Richetta, Purdue University, May 1935.**

Physical Description: 7 l.

Folder 62.29 ***Determination of the effect of certain installation conditions on the coefficients of shart-edged orifices,*** **by S.R. Beitler and J.E. Overbeck, *Transactions of the A.S.M.E.,* April 1937. pp.115-120.**

Folder 62.30 ***A theory of sharp-edged orifices,*** **by W.E. Howland, *Journal of Applied Mechanics,* August 1937. pp.53-54.**

Folder 62.31 ***Square-edged inlet and discharge orifices for measuring air volumes in the testing of fans and blowers,*** **by Lionel S. Marks, *Transactions of the A.S.M.E.,* Jan.1937. pp.593-597.**

Folder 62.32 ***Der staudruck vor durchfluBmesserblenden,*** **by F. Engel, *Die Warme: Zeitschrift fur Dampfkessel u. Maschinenbetrieb,* June 1937. pp.415-417.**

Folder 62.33 ***Standards of Hydraulic Institute, Eighth Edition,*** **Hydraulic Institute, 1947.**

Physical Description: 82 p.

Folder 62.34 ***Measurement of water flow through pipe orifice with free discharge,*** **Layne & Bowler, Inc., Memphis, Tenn, Oct.1943.**

Physical Description: 51 p.

ORIFICE COEFFICIENTS AT LOW REYNOLDS NUMBERS

Box Box 10, Folder 63.1 ***Orifice coefficients for Reynolds numbers from 4 to 50000,*** **by H.W. Iversen, [n.p.] 1954.**

Physical Description: 10+ l.

Folder 63.2 ***Coefficients of discharge of sharp-edged concentric orifices in commercial 2-in., 3-in., and 4-in. pipes for low Reynolds numbers using flange taps,*** **by E.E. Ambrosius and L.K. Spink, *Transactions of the A.S.M.E.,* November 1947. pp.805-812.**

Folder 63.3 ***Experiments on the flow of viscous fluids through orifices,*** **by G.F. Davidson, from Proc. Royal Soc., Series A, Vol.89, June 1913.**

Physical Description: 7 l. (typescript)

Folder 63.4 ***Die durchflußzahlen von normaldusen und normalstaurändern für Rohrdurchmesser von 100 bis 1000 mm,*** **by M. Jakob and Fr. Kretzschmer, *Forschungsarbeiten* auf dem Gebiete des Ingenieurwesens, Berlin, 1928. 35 p. (Heft 311)**

Folder 63.5 ***The diaphragm method of measuring the velocity of fluid-flow in pipes,*** **by Holbrook Gaskell, [n.p., n.d.] pp.243-263. (Selected papers no.4092)**

Folder 63.6 ***Flow masurement with nozzles and orifices at low values of the Reynolds number,*** **by H.G. Giese, [n.p.] 1933.**

Physical Description: 14 l.

Folder 63.7 ***Fluid flow measurement in pipe sizes below two inches,*** **by Henry W. Stoll, reprinted from *Petroleum Refiner,* Nov.1948.**

Physical Description: 5 p.

Folder 63.8 ***See*** **62.30**

Folder 63.9 ***Orifice discharge coefficients in the viscous flow range,*** **by G.S. Peterson, for presentation at the Annual Meeting, ASME, New York, Dec.2-6, 1946.**

Physical Description: 19 l.

Folder 63.10 ***Air flow through small orifices in the viscous region,*** **by H.R. Linden and D.F. Othmer, *Transactions of the ASME,* Oct.1949. pp.765-772.**

Folder 63.11 ***The laws of similarity for orifice and nozzle flows,*** **by John L. Hodgson, *Transactions of the A.S.M.E.,* [n.d.]**

Physical Description: 17 p.

Folder 63.12 ***Flow through two orifices in series,*** **by W.M. Rohsenow, C.H. Fink, and S.R. Pollis, American Society of Mechanical Engineers, New York, Jan.1952. 4 p. (Paper no.51-A-87)**

Folder 63.13 ***The influence of viscosity on centifugal-pump performance,*** **by Arthur T. Ippen, *Transactions of the A.S.M.E.,* Nov.1949. pp.823-848.**

Folder 63.14 ***Orifice discharge coefficients in the viscous-flow range,*** **by G.S. Peterson, *Transactions of the A.S.M.E.,* Oct.1947. pp.765-767.**

Folder 63.15 ***Calibration of rounded-approach orifices,*** **by J.F. Downie Smith, *Transactions of the A.S.M.E.,* Jan.1935. pp.791-793. (RP-56-10)**

Folder 63.16 ***Orifice discharge coefficients for viscous liquids,*** **by G.L. Tuve and R.E. Sprenkle, *Instruments,* Nov.1933. pp.201-206.**

Folder 64.1 ***Discharge measurements at low Reynolds numbers,*** **A.S.M.E. Research Committee on Fluid Meters, Subcommittee #7, Annual report, Nov.1951.**

Physical Description: 14 l.

Folder 64.2 **[References for flow meters at low Reynolds numbers, prepared by W.A. Gross, 1951.]**

Physical Description: 1 folder, (handwritten and typescript)

Folder 64.3 ***Discharge measurements at low Reynolds numbers; special devices,*** **by A.L. Jorissen, ASME, New York, Oct.1955. 10 p. (Paper no. 54-A-190**

Folder 64.4 ***Standardized nozzles and orifices used in closed conduits-results of experiments at low Reynolds numbers,*** **by Mario Marchetti, (translated), Feb.1947.**

Physical Description: 36 l.

Folder 64.5 ***La mesure des debits aux petits nombres de Reynolds,*** **by Andre Jorissen, Liege, 1954.**

Physical Description: 12 p.

Folder 64.6 ***An investigation of the coefficient of discharge of liquids through small round orifices,*** **by W.F. Joachim, National Advisory Committee for Aeronautics, Washington, D.C., 1926. 10 p. (Report no. 224)**

Folder 64.7 ***Orifice coefficients at low Reynolds numbers,*** **by H.W. Iversen, interim report to the ASME Research Committee on Fluid Meters, 1953.**

Physical Description: 5 l.

Folder 64.8 ***Investigation of fluid meters at low Reynolds numbers,*** **by Anatole W. Elvitsky, [n.p., n.d.]**

Physical Description: 1 v. (unpaged, handwritten)

Folder 64.9 ***Flow coefficients for eight sharp edge orifices in a one-inch I.D. pipe,*** **by Charles Kojabashian, Massachusetts Institute of Technology, 1952.**

Physical Description: 32 l.

Folder 64.10 ***Investigation of published information on orifice meters at low Reynolds numbers,*** **by Anatole W. Elvitsky [n.p., n.d.]**

Physical Description: 1 folder (unpaged)

Folder 64.11 ***Determination of the coefficient of the flow of nozzles and submerged orifices,*** **by P. Leroux, and J. Deullin, Annales des Mines ou Resueil, Treizieme serie tome IV, II LiVraison de 1933.**

Physical Description: 36 p. (typescript)

Folder 64.12 ***Research on standard nozzles,*** **by G. Ruppel, VDI, 1935.**

Physical Description: 12 p.

Folder 64.13 ***New shapes of nozzles for low and medium Reynolds numbers,*** **by W. Koennecke, Berlin, 1938.**

Physical Description: 16 l. (typescript)

METERING-NOZZLES

Box Box 10, Folder 65.1 ***Determination of ASME nozzle coefficients for variable nozzle external dimensions,*** **by R.G. Folsom, ASME, Jan.1950. 7 p. (Paper no. 49-A-110)**

Folder 65.2 ***Nozzle coefficients for free and submerged discharge,*** **by R.G. Folsom, *Transactions of the A.S.M.E.,* January 1939.**

Physical Description: 6 p.

Folder 65.3 ***Research on flow nozzles; record of progress in the work of the A.S.M.E. Special Research Committee on Fluid Meters,*** **by Howard S. Bean, *Transactions of the A.S.M.E.,* Mechanical Engineering, Jan.1939. pp.500-502.**

Folder 65.4 ***Uber Anderungen der Stromungsform in MeBdusen,*** **by Fritz Kretzschmer, *Forschung,* 9 Bd., Heft 1, Jan./Febr.1938. pp.35-40.**

Folder 65.5 ***Discharge coefficients of long-radius flow nozzles when used with pipe-wall pressure taps,*** **by H.S. Bean, S.R. Beitler, and R.E. Sprenkle, *Transactions of the A.S.M.E.,* July 1941. pp.439-445.**

Folder 65.6 ***Hydraulic characteristics of fuel-injection nozzles,*** **by O.F. Zahn, *Transactions of the A.S.M.E.,* May 1942. pp.373-377.**

Folder 65.7 ***Fluid-meter nozzles,*** **by B.O. Buckland, *Transactions of the A.S.M.E.,* January 1935. pp.827-832.**

Folder 65.8 ***Experimental investigation of fire monitors and nozzles,*** **by Hunter Rouse, J.W. Howe, and D.E. Metzler, *Proceedings,* ASCE, Vol.77, Separate no. 92, Oct.1951.**

Physical Description: 29 p.

Folder 65.9 ***A.S.M.E. long radius nozzle tests; report on pipe tap measurements for free discharge,*** **University of California, Department of Mechanical Engineering, 1937.**

Physical Description: 8 l. (typescript)

Folder 65.10 **[ASME fluid meters correspondence, 1935-1938; blueprints; misc. literature.]**

Physical Description: 1 folder.

Folder 65.11 ***Flow nozzle coefficient tolerances,*** **by S.R. Beitler, ASME, Jan.1973. (Publication 72-WA/FM-7)**

Folder 65.12 ***Air and water studies on a diffuser-modified flow nozzle,*** **by R.P. Benedict, A.R. Gleed and R.D. Schulte, ASME, Jan.1973. 9 p. (Paper no. 72-WA/FM-5)**

METERING-VENTURI

Box Box 10, Folder 66.1 ***The Venturi meter for main pipe lines,*** **Builders Iron Foundry, Providence, R.I., 1929. 23 p. (Bulletin 243)**

Folder 66.2 ***The pitot-venturi flow element,*** **by H.W. Stoll, ASME, New York, January 1951. 7 p. (Paper no. 50-A-46)**

Folder 66.3 ***Die Beiwerte von Normdüsen und Normblenden im Einlauf und Auslauf,*** **von E. Stach, *Zeitschrift des Vereines deutscher Ingenieure,* Bond 78, Nr. 6, Feb.10, 1934. pp.187-189.**

Folder 66.4 ***New flow meter uses side contractions only,*** **by Floyd A. Nagler, *Engineering News-Record,* Aug.3, 1933. pp.131-132.**

Folder 66.5 ***Beeinflussung der Anzeige von Venturimessern durch kleine Abweichungen in der Düsenform,*** **von J. Spangler, [n.p., n.d.]**

Folder 66.6 ***Aufbau der messtechnischen uberwachung der Kläranlage West-Middlesex,*** **by F. Engel, *Archiv für Technisches Messen,* July 1937. pp.86-89.**

Folder 66.7 ***Abflussgleichungen für venturikanäle,*** **von F. Engel, *Deutsche Wasserwirtschaft,* No. 6, 1937. pp.110-114.**

Folder 66.8 ***A practical venturi meter for irrigation service,*** **by J.E. Christiansen and I.H. Teilman, reprinted from *Engineering News-Record,* January 29, 1931. pp.183-188.**

Folder 66.9 **a) *Effect of high temperatures and pressures on cast-steel venturi tubes,* by W.S. Pardoe, ASME, Dec.1938.**
b) *The coefficient of Herschel type cast-iron venturi meters,* by W.S. Pardoe, ASME, 1944.

Folder 66.10 ***Beeinflussung der Anzeige von Venturimessern durch vorgeschaltete Krümmer,*** **by H. Mueller [n.p., n.d.] pp.29-40.**

Folder 66.11 **[Folder containing: Calibration of venturi Meters, E-11, July 3, 1936, University of California, run by the Pelton Water Wheel Company; correspondence between Ray S. Quick, Chief Engineer, and M.P. O'Brien, 1936.]**

Folder 66.12 ***Primary elements for sewage and water works meters,*** **by L.D. Carylon, reprinted from *Water Works and Sewerage,* November 1935.**

Physical Description: [4] p.

Folder 66.13 ***The effect of installation on the coefficients of venturi meters; final report,*** **by W.S. Pardoe, *Transactions of the A.S.M.E.,* Vol.65, No. 4, May 1943.**

Folder 66.14 ***The effect of ambient temperatures on the coefficients of venturi meters,*** **by W.S. Pardoe, *Transactions of the A.S.M.E.,* July 1941. pp.457-463.**

Folder 66.15 ***The Dall flow tube,*** **by I.O. Miner, reprinted from *Transactions of the A.S.M.E.,* April 1956.**

Physical Description: 5 p.

Folder 66.16 ***Investigations for the standardization of venturi tubes,*** **by R. Witte, VDI, Ludwigshafen am Rhein [n.d.]**

Physical Description: 8 p. (typescript)

Folder 66.17 ***Experiments with venturi tubes having a standard nozzle for the converging section,*** **by Alb. Schlag, University of Liege Jan. 1939.**

Physical Description: 5 l.

Folder 66.18 ***The hydromike,*** **Vol. IV, No. 3, May, 1941, Portland, Ore.**

Physical Description: 1 fold. sheet.

Folder 66.19 ***Determining coefficients for large venturi meters,*** **by S.F. Coghlan, *Engineering News-Record,* January 29, 1931. pp.185-186.**

Folder 66.20 ***Discharge coefficients of Herschel-type venturi tubes,*** **by A.L. Jorissen, *Transactions of the A.S.M.E.,* November 1951.**

Physical Description: 6 p.

Folder 66.21 ***Venturi tube characteristics,*** **by J.W. Ledoux, *Papers,* ASCE, February 1927. pp.1787-1796.**

Folder 66.22 ***The equalization of pressure in the ring casing of throttling apparatus,* by Wm. Beckmann, translated by E.B. Barnes from *Forschung auf dem gebiete des Ingenieurewesens,* Band, 8, July/August 1937.**

Physical Description: 20 l. (typescript)

Folder 66.23 ***Standardization of venturi tubes for discharge measurement,* by H. Lohman, [n.p., 1938].**

Physical Description: 3 l. (typescript)

Folder 66.24 ***Nozzle coefficients for free and submerged discharge,* by R.G. Folsom, reprinted from A.S.M.E. *Transactions,* April 1939. pp.233-238.**

Folder 66.25 ***Contribution a la normalisation des tubes venturi,* par Alb. Schlag et Andre Jorissen, *Revue Generale de L'hydraulique,* 1946.**

Physical Description: 22 p.

Folder 66.26 ***Effect of cavitation on the accuracy of Herschel-type venturi tubes,* by F. Numachi, R. Kobayashi, and S. Kamiyama, *Trans. of ASME,* September 1962. pp.351-362.**

METERING-POSITIVE DISPLACEMENT

Box Box 10, Folder 67.1 ***Petroleum P.D. meter code (ASME-API code for installation, proving and operation of postive displacement meters in liquid hydrocarb on service),*** **American Society of Mechanical Engineers and American Petroleum Institute, New York, rev.Jan.1952.**

Physical Description: 53 p.

Folder 67.2 ***(Proposed) code of recommended practice covering installation, calibration and operation of positive displacement meters in liquid hydrocarbon service,*** **by Joint ASME-API Committee for Volumeter Research [n.p.]Oct.1945.**

Physical Description: 25 l.

Folder 67.3 ***(Tentative) code covering installation, proving and operation of positive displacement meters in liquid hydrocarbon service,*** **by Joint ASME-API Committee for Volumeter Research, [n.p.] May 1, 1946.**

Physical Description: 27 p.

Folder 67.4 ***Rotary oil meters of the displacement and current types,*** **by Everett M. Cloran, for presentation at the Fall Meeting of the A.S.M.E., Oct. 4-6, 1937.**

Physical Description: 12 p. (typescript)

Folder 67.5 ***See*** **67.4**

Folder 67.6 ***Calibration of positive-displacement oil meters,*** **by R.E. Heithecker and W.B. Berwald, U.S. Bureau of Mines, April 1938. 21 l. (Report of investigations 3396)**

Folder 67.7 ***Results of tests on volumeters for liquid hydrocarbons,*** **by R.J.S. Pigott, E.E. Ambrosius, and E.W. Jacobson, *Transactions of the A.S.M.E.,* Dece.ber 1942. pp.350-352.**

Folder 67.8 ***Calibration of displacement meters on volatile-liquid-petroleum fractions,*** **by E.W. Jacobson, *Transactions of ASME,* November 1941. pp.701-704.**

Folder 67.9 ***Volumeter research; an interim report of the A.S.M.E. Special Research Committee on Fluid Meters,*** **by Edgar E. Ambrosius and Howard S. Bean, *Mechanical Engineering,* Sept. 1940. pp.677-687.**

METERING-PITOT TUBE

Box Box 12, Folder 68.1 ***Calibration of Peerless pitot tube in pipes,*** **by W.A. Page, June 1949.**

Physical Description: 30 p. (typescript)

Folder 68.2 ***Performance characteristics of pitot tubes in water pipes,*** **by William Allen Page, M.S. thesis in Mechanical Engineering, University of California, Berkeley, 1949.**

Physical Description: 31+ l. (typescript)

Folder 68.3 ***Pitot tubes operating instructions,*** **Johnston Vertical Pumps, Pasadena, Calif. [n.d.]**

Physical Description: 3 p.

Folder 68.4 ***Pitot tube characteristics in the measurement of water in circular pipes,*** **by G. Clancy [data book], March 1950.**

Physical Description: 1 v. (handwritten)

Folder 68.5 ***Progress report; pitot tube project,*** **by Gerald M. Clancy, [n.p.] Feb. 1950.**

Physical Description: 25+ p. (handwritten)

Folder 68.6 ***The flow of viscous liquids through pipes,*** **by W.K. Lewis, The *Journal of Industrial and Engineering Chemistry*, July 1916. pp.627-632.**

Folder 68.7 **a) *Friction heads due to water flow in cooper, brass and other smooth pipes,* by F.E. Giesecke, *Heating, Piping & Air Conditioning - ASHVE Journal Section,* Nov. 1942. pp.679-685.**

b) *The performance of side outlets on horizontal ducts,* by D.W. Nelson and G.E. Smedberg, *Heating, Piping & Air Conditioning - ASHVE Journal Section,* Nov. 1942. pp.686-693.

Folder 68.8 ***Suggested formula for calculating capacity of products pipe lines,*** **by T.R. Aude, *The Petroleum Engineer,* Reference Annual, 1944. pp.191-192.**

Folder 68.9 ***Streamlined pitot-tube bar for measuring water flow in large pipes,*** **by F. Numachi, H. Murai and S. Abe, ASME, April 1956. 16 p.(Paper no. 55-SA-25)**

Folder 68.10 ***Fluid flow through porous metals,*** **by Leon Green and Pol Duwez, *Journal of Applied Mechanics,* June 1950. 7 p. (Paper no. 50-SA-17)**

Folder 68.11 ***Further investigation of the pitot-static tube,*** **by Kenneth G. Merriam and Ellis R. Spaulding, *Journal of the Aeronautical Sciences,* Vol.3, November 1935. pp.55-57.**

Folder 68.12 ***A general correlation of friction factors for various types of surfaces in cross flow,*** **by A.Y. Gunter and W.A. Shaw, reprinted from the 1945 *Transactions* of the ASME Heat Transfer Division. pp.643-659.**

Folder 68.13 ***Design of modern industrial piping systems; the flow of fluids,*** **Tube-Turns, Incorporated, Lousiville, Ky, 1935.**

Physical Description: 6 p.

Scope and Content Note

(Bulletin no.108)

Folder 68.14 ***The flow of air and gas in vertical flue coke ovens,*** **by George A. Davis, Wilputte Coke Oven Corporation, 1945.**

Physical Description: 12 p.

Folder 68.15 ***Pipe factors for quantity rate flow measurements with pitot tubes,*** **by R.G. Folsom and H.W. Iversen, ASME, New York, Jan.1949.**

Physical Description: 17 p.

METERING-CURRENT METERS, WEIRS, OPEN CHANNEL

Box Box 12, Folder 69.1 ***The rating and use of current meters,*** **by Carl Rohwer, Colorado Experiment Station, Fort Collins, May 1933. 133 p. (Tech. bulletin 3)**

Folder 69.2 ***Water measurement,*** **by Wayne D. Criddle and Eldon M. Stock, Utah State Engineering Experiment Station, Logan, June 9, 1941. 51 p. (Bulletin no.2)**

Folder 69.3 ***Strömungsmessungen im Mündungsgebiet der Elbe. Wassermengenbestimmungen im Tidegebiet,*** **von John.Th. Schäzler;** ***Strommessungen im Meere. Eichung des Richtungszeigers an einem Schwimmflügel für Strommessungen im Tidengebiet,*** **von K. Lüders,** ***Zentralblatt der Bauverwaltung vereignight mit Zeitschrift für Bauwesen,*** **Berlin 1931-1932.**

Physical Description: 1 v.

Folder 69.4 ***A view on discharge coefficient for large rectangular notches or weirs,*** **by Kensaburo Toyoda,** ***Research Reports of Faculty of Engineering,*** **Meiji University, No.6, 1955. pp.1-10**

Folder 69.5 ***Equipment for river measurements; plans and specifications for structures from which discharge measurements are made (Revised edition),*** **U.S. Geological Survey, Water Resources Branch, 1933.**

Physical Description: 17+ p.

Folder 69.6 ***Measurement of irrigation water on the farm,*** **by H.A. Wadsworth, University of California, Agricultural Experiment Station, July 1922. 36 p. (Circular no.250)**

Folder 69.7 ***Measuring water for irrigation,*** **by J.E. Christiansen, University of California, Agricultural Experiment Station, Berkeley, March 1935. 96 p. (Bulletin 588)**

Folder 69.8 ***Effect of turbulence on the registration of current meters,*** **by David L. Yarnell and Floyd A. Nagler, American Society of Civil Engineers, December 1929. pp.2611-2640. (Papers and discussions)**

Folder 69.9 ***Observations on the use of current meters for precise flow measurement,*** **by L.A. Ott,** ***Transactions of the ASME,*** **December 1933. pp.227-228. (HYD-57-6)**

Folder 69.10 **a)** ***Instructions for use for Ottmeter V,*** **A. Ott, Kempten, Bavaria [n.p., n.d.]**

Physical Description: 16 p.

b) ***Construction and use of the Ottmeter Mark V,*** **A. Ott, Kempten, Bavaria [n.p., n.d.]**

Physical Description: 26 p.

Folder 69.11 ***Le courant-metre 'Boccardo',*** **estratto dal** ***Giornale del Genio Civile-Revista dei Lavori Pubblici,*** **1909.**

Physical Description: 4 p.

Folder 69.12 ***Errors involved in the use of current meters,*** **by Erik Lindquist, and Morrough P. O'Brien [n.p., n.d.]**

Physical Description: 7 l. (typescript)

Folder 69.13 ***Notes on the design of current meters,*** **by M.P. O'Brien and R.G. Folsom,** ***Transactions,*** **American Geophysical Union, Volume 29, No.2 April 1948.**

Folder 69.14 ***Current meter notes,*** **by Ed. J. Hoff, Berkeley, Calif., [n.d.]**

Physical Description: 6 l. (typescript)

Folder 69.15 ***Die genauigkeit einiger Wassermessverfahren,*** **von O. Kirschmer und B. Esterer, sonderabdruck aus der** ***Zeitschrift des Vereines deutscher Ingenieure,*** **Bd.74, No.44, 1930.**

Physical Description: 6 p.

Folder 69.16 ***View on discharge coefficient for large rectangular notches or weirs,*** **by Kensaburo Toyoda,** ***Research Reports of the Faculty of Engineering, Meiji University,*** **No.6, 1955.**

Physical Description: 10 p.

Folder 69.17 ***The V-notch weir for hot water,*** **by Ed S. Smith, Jr.,** ***Transactions of the ASME,*** **January 1934. pp.787-789. (RP-56-9)**

Folder 69.18 **[Material on current meters including:** ***Pygmy current meter designed and constructed,*** **by R.L. Atkinson, U.S. Geological Survey, Dec.1934; references on current meters reviewed for Feb.1947 AGU paper, by R.G. Folsom.]**

Physical Description: 1 folder.

Folder 69.19 **a)** ***The calibration of current meters,*** **by Erik Lindquist, Oct.18, 1924, Translation no.54 (from Swedish), by M.P. O'Brien.**
b) ***The effect of inclination to the direction of flow on a current-meter supported on a rod and having a protecting rim,*** **by Erik Lindquist, April 17, 1926, translation no.50 (from Swedish), by M.P. O'Brien.**
c) ***On the errors of current-meters,*** **by Erik Lindquist, Feb.19, 1927, Translation no.53 (from Swedish), by M.P. O'Brien.**

METERING-COMPRESSIBLE FLOW

Box Box 12, Folder 70.1 ***The flow of air through circular orifices with rounded approach,*** **by Joseph A. Polson, Joseph G. Lowther and Benjamin J. Wilson, *University of Illinois Bulletin,* Vol.XXVII, No.39, May 27, 1930.**

Physical Description: 52 p.

Folder 70.2 ***The flow of air through circular orifices in thin plates,*** **by Joseph A. Polson, and Joseph G. Lowther, *University of Illinois Bulletin,* Vol.XXIX, No.44, Jan.29, 1932.**

Physical Description: 40 p.

Folder 70.3 ***Orifice flow provers; critical flow-low pressure flow,*** **American Meter Co., 1935. 15 p. (Bulletin E-8)**

Folder 70.4 ***Reaction tests of turbine nozzles for supersonic velocities and for subsonic velocities,*** **by J.H. Keenan, reprinted from *Transactions of the ASME,* October 1949.**

Folder 70.5 ***Vecchie e nuove formule del coefficiente udometrico,*** **by Guido Ferro, estratto dal no.4 della rassegna mensile *Tecnica Italiana,* Maggio 1936-XIV, E.F.**

Physical Description: 8 p.

Folder 70.6 ***Calibration of ASME flow nozzles in steam,*** **by C.J. Walker, General Electric Co., Turbine Engineering Dept., June 20, 1940.**

Physical Description: 1 v. (typescript) (blueprints)

Folder 70.7 **[Report of the Joint Committee on Measurement of Natural Gas With Orifice Meters, n.p., Aug.1930.]**

Physical Description: 58 l.

Folder 70.8 ***Quantity-rate fluid meters; correlation of coefficients and expansion factors, using the Reynolds Number and acoustic velocity ratio,*** **by Ed S. Smith, Jr., *Transactions of the ASME,* Nov.1929. pp.89-135. (HYD-52-7b)**

Folder 70.9 ***Methods of measuring large volumes of natural gas,*** **by J.E. Overbeck, and S.R. Beitler, ASME, July 1939.**

Physical Description: 12 p.

Folder 70.10 ***The measurement of air flow in fan inlet and discharge ducts,*** **Lionel S. Marks, *Transactions of the ASME,* Jan.1936. pp.429-510. (PTC-57-1)**

Folder 70.11 ***An improved meter for the measurement of gas flow rates,*** **by W.G. Appleby and W.H. Avery, reprinted from *Industrial and Engineering Chemistry,* March 1944. p.115.**

Folder 70.12 ***Factors affecting measurement of wet gas,*** **by T.C. Shaw, Petroleum Refiner, Vol.24, No.3, March 1945. pp.105-108.**

Folder 70.13 ***Influence of steam-flow metering equipment on piping design,*** **by R.M. van Duzer, Jr., *Mechanical Engineering,* Nov.1938. pp.834-836. [Folder includes Letters and comment, July 1939, pp.547-552.]**

Folder 70.14 ***High pressure meter testing with critical flow orifice prover,*** **by R.M. Stewart, Pacific Gas and Electric Company, May 1935.**

Physical Description: 4 l.

Folder 70.15 ***Alignment chart for orifice meter calculations for gas pipe line, The Oil and Gas Journal,*** **July 22, 1941. pp.69-72.**

Folder 70.16 ***Two- and three-dimensional flow of air through sonic orifices,*** **by Alexander Weir, Jr., J. Louis York, and Richard B. Morrison [n.p., n.d.]**

Physical Description: 3 l. (typescript)

Folder 70.17 ***Nozzles for supersonic flow without shock fronts,*** **by Ascher H. Shapiro, *Journal Applied Mech.,* Vol. 11, No.2, June 1944. pp.93-100. [Bound with: *Supersonic nozzle design,* by A.E. Puckett, *J. Applied Mech.,* Vol.13, No.4, Dec.1946. pp.265-270]**

Folder 70.18 ***Quantity-rate fluid meters (coefficients and expansion factors correlated with flow similarity, using the Reynolds number and acoustic velocity ratio,*** **by S. Smith Jr., Paper no.719, World Engineering Congress, Tokyo, 1929.**

Physical Description: 48 p.

Folder 70.19 ***The flow of saturated water through throttling orifices,*** **by M.W. Benjamin and J.G. Miller, *Transactions of the A.S.M.E.,* Dec.1940. pp.419-429.**

Folder 70.20 ***Performance of conical jet nozzles in terms of flow and velocity coefficients,*** **by Ralph E. Grey, Jr. and H. Dean Wilsted, National Advisory Committee for Aeronautics, Washington, D.C., 1949.**

Physical Description: 10 p.

Folder 70.21 ***The critical flow function for superheated steam,*** **by J.W. Murdock, and J.M. Bauman, *Transactions of the ASME,* Jan.1964. 10 p. (Paper no.63-WA-19)**

PULSATING FLOW MEASUREMENT

Box Box 12, Folder 71.1 ***The measurement of a rapidly fluctuating flow of gas,*** **by J.G. King and B.H. Williams, [Gt.Brit.] Department of Scientific and Industrial Research, Sept.1930. 18 p. (Fuel Research, Technical report no.27)**

Folder 71.2 ***The effects and corrections of gas pulsation problems,*** **by Foster M. Stephens, The Fluor Corporation, Ltd., Los Angeles, [n.d.] 1 v. (unpaged) (Bulletin PD-1)**

Folder 71.3 **a) *Pulsating air velocity measurement,* by Neil P. Bailey, Rutgers University, 1938.**

Physical Description: 6 p.

b) *Pulsating air flow,* by Neil P. Bailey, *Transactions of the A.S.M.E.,* Jan. 1935. pp.781-786.

Folder 71.4 **"Experimentelle Untersuchung des Einflusses von Pulsationen auf den Strömungswiderstand von Kreisrohren und die Durchflusszahl von Normdüsen," von Ernst Estel, Leipzig 1936.**

Physical Description: 15+ p.

Folder 71.5 ***Flow measurement for pulsating flow,*** **by F. Schultz-Grunow, *Forschung,* Vol. 12, May/June 1941. pp.117-126.**

Folder 71.6 ***The detection and mitigation of pulsation in orifice meters,*** **by T.K.M. Smith, and R.E. Morter, *G A S,* Sept. 1938. pp.55-63.**

Folder 71.7 ***Survey of metering of pulsating flows of gas,*** **by Howard S. Bean, *Western Gas,* October 1935. pp.44-48.**

Folder 71.8 ***The use of nozzles in measuring pulsating flow, Chemical and Metallurgical Engineering,*** **Vol. 26, No. 1, Jan. 4, 1922. pp.32-34.**

Folder 71.9 ***The damping of large amplitude vibrations of a fluid in a pipe,*** **by R.C. Binder, reprinted from the *Journal of the Acoustical Society of America,* Vol. 15, No. 1, July 1943. pp.41-43.**

Folder 71.10 ***Oscillating piston meters for fuel consumption in aircraft,*** **by C.S. Hazard, American Society of Mechanical Engineers, Jan. 1948. 6 p. (Paper no. 47-A-54)**

Folder 71.11 ***Developments in the measuring of pulsating flows with inferential-head meters,*** **by S.R. Beitler, E.J. Lindahl and H.B. McNichols, *Transactions of the A.S.M.E.,* May 1943. pp.353-356.**

Folder 71.12 ***See* 71.6**

Folder 71.13 ***Pulsation and its effect on flowmeters,*** **by E.J. Lindahl, *Transactions of the A.S.M.E.,* November 1946. pp.883-894.**

METERING-MISCELLANEOUS

Box Box 12, Folder 72.1 ***Coordinate methods of measuring pipe flow,*** **by J.E. Christiansen, University of California, Division of Irrigation Investigations and Practice, [n.d.]**

Physical Description: 4 *l.*

Folder 72.2 ***The use of an elbow in a pipe line for determining the rate of flow in the pipe,*** **by Wallace M. Lansford, University of Illinois Bulletin, Vol. XXXIV, No. 33, December 22, 1936.**

Physical Description: 36 p.

Folder 72.3 ***Transient response of the turbine flowmeter,*** **by Jerry Grey, reprinted from *Jet Propulsion,* Feb. 1956.**

Physical Description: 4 p.

Folder 72.4 ***Turbine discharge metering at the safe harbor hydroelectric development,*** **by J.M. Mousson, *Transactions of the ASME,* January 1941.**

Physical Description: 11 p.

Folder 72.5 ***Piezometer investigation,*** **by Charles M. Allen and Leslie J. Hooper, *Transactions of the ASME,* Dec. 1931. 16 p. (HYD-54-1)**

Folder 72.6 ***Manometer errors due to capillarity,*** **by Richard G. Folsom, [n.p., n.d.]**

Physical Description: 2 p.

Folder 72.7 ***Measurement of pipe flow by the coordinate method,*** **by F.W. Greve and Maurice J. Zucrow, reprinted from the *Journal of the American Water Works Association,* Vol. 13, No. 3, March 1925. pp.306-311.**

Folder 72.8 ***The use of pipe bends as flow meters,*** **by Herbert Addison, *Engineering,* March 4, 1938. pp.227-229.**

Folder 72.9 ***Methods of flow measurement,*** **by Jerry Grey and Frederick F. Liu, reprinted from *Journal of the American Rocket Society,* May-June, 1953. pp.133-149.**

Folder 72.10 ***Piping arrangements for acceptable flowmeter accuracy,*** **by R.E. Sprenkle, *Transactions of the A.S.M.E.,* July 1945. pp.345-360.**

Folder 72.11 ***Precision and accuracy of orifice-meter installations,*** **by L.V. Cunningham, Jr., *Mechanical Engineering,* December 1950. pp.979-983.**

Folder 72.12 ***Measuring velocities in dredge pipes; salt-velocity method applied to pipe lines transporting solids,*** **by George W. Howard, *Mechanical Engineering,* [n.d.] pp.287-288.**

Folder 72.13 ***Hydraulic turbine tests by the Allen method; electrical conductivity of salt solution forms basis of bethod which gives required test accuracy without the use of coefficients or empirical formulas,*** **by C.M. Allen, *Power Plant Engineering,* May 15, 1927.**

Physical Description: 3 p.

Folder 72.14 ***Field checks of the salt-velocity method,*** **by Oswald H. Dodkin, *Transactions of the A.S.M.E.,* November 1940. pp.663-676.**

Folder 72.15 ***Determination of pipe-line velocities in brackish water,*** **by George W. Howard, *Mechanical Engineering,* July 1939. pp.530-534.**

Folder 72.16 ***Salt-velocity measurements at low velocities in pipes,*** **by Leslie J. Hooper, *Transactions of the A.S.M.E.,* November 1940. pp.651-661.**

Folder 72.17 ***A magnetic flowmeter,*** **by W.M. Lansford, [n.p.] January 1939. pp.20-23.**

Folder 72.18 ***The Annis meter; instrument for measuring flow at intake end of closed conduits,*** **by M.B. MacNei-le and Russell K. Annis, *Mechanical Engineering,* April 1941. pp.281-285, 681-684.**

Folder 72.19 ***Electrical-conductance measurements of water and steam, and applications in steam plants,*** **by Max Hecht and D.S. McKinney, *Transactions of the A.S.M.E.,* June 1930. pp.139-159. (FSP-53-11)**

Folder 72.20 ***Vergleichs-wassermessungen am walchenseewerk,*** **von O. Kirschmer, *Zeitschrift des Vereines deutscher Ingenieure,* Bd. 74, Nr. 17, April 1930. pp.521-528.**

Folder 72.21 **a) *Measurement of water in closed conduits, by three methods - salt velocity, color, and pitot tube: Part 2, The color method,* by Fred C. Scobey, *Western Construction News,* November 25, 1927. pp.38-42.**

b) ***Color used in hydraulic tests of power plants,*** **by Roy Taylor,** ***Engineering News,*** **September 23, 1915. pp.617-620.**

Folder 72.22 ***Die Genauigkeit einiger Wassermessverfahren,*** **von O. Kirschmer und B. Esterer,** ***Zeitschrift des Vereines deutscher Ingenieure,*** **Bd. 74, Nr. 44, 1930.**

Physical Description: 6 p.

Folder 72.23 **"Der beiwert kreisrunder Überfälle," von A. Staus, sonderdruck aus** ***Wasserkraft und Wasserwirtschaft,*** **Heft 4, 1931.**

Physical Description: 8 p.

Folder 72.24 ***Proceedings of the One Hundred and Thirty-fifth Regular Meeting,*** **American Society of Civil Engineers, Vol. 23, No. 5, Oct. 18, 1927.**

Physical Description: 15 p.

Folder 72.25 ***Mixing, diluting or contaminating effects with liquid flow in pipes,*** **by Ernest W. Schoder,** ***The Cornell Civil Engineer,*** **Dec. 1911. pp.122-127.**

Folder 72.26 **[Folder containing material on metering including: proposal for M.E.199 by Albert S. Guerard, on chemical gauging, salt velocity method, etc., April 1935;** ***Stop turbine blade erosion, The Graphic,*** **n.d.;** ***Concentration salinity indicators,*** **The Babcock & Wilcox Co., n.d.,**

Physical Description: 15 p.]

Folder 72.27 ***The effect of mouthpieces on the flow of water through a submerged short pipe,*** **by Fred B. Seely,** ***University of Illinois Bulletin,*** **Vol. XIV, No. 35, April 30, 1917.**

Physical Description: 53 p.

Folder 72.28 ***Cours de mesures hydrauliques, Tome II,*** **L. Vadot, Centre de Documentation Universitaire, Paris, 1947. pp.183-241.**

Folder 72.29 ***Characteristics of differential flow meters and factors affecting their operation,*** **by L.K. Spink, reprinted from** ***Petroleum Refiner,*** **October, November and December 1944.**

Folder 72.30 ***Metodi chimico e chimico-elettrico per la misura delle portate,*** **by Vittorio Pisa, Comitato per l'Ingegneria del Consiglio Nazionale delle Ricerche, Centro di Ricerche Idauliche nel R. Istituto Superiore de Ingegneria di Padova, 1935.**

Physical Description: 42 p.

Folder 72.31 ***Discharge measurements by sharp-edged orifices and salt velocity methods,*** **by L.J. Hooper, American Society of Mechanical Engineers, March 1963. 4 p. (Paper no. 62-HYD-9)**

Folder 72.32 ***Effects of brine dispersion in the Allen salt-velocity method,*** **by L.J. Hooper,** ***Transactions of the ASME,*** **Jan. 1961. 10 p. (Paper no. 60-WA-138)**

TURBINES, GENERAL THEORY

Box Box 12, Folder 73.1 ***Water turbine machinery,*** **by A.A. Fulton, [n.p.] Dec. 14, 1948. pp.206-236. (Paper no. 1110)**

Folder 73.2 ***Elements of hydraulic power generation,*** **by Arthur M. Greene, Jr., John Wiley & Sons, Inc., 1934.**

Physical Description: 58 p.

Folder 73.3 ***Theory and test of an overshop water wheel,*** **by Carl Robert Weidner, *Bulletin of the University of Wisconsin,* No. 529, Madison, Wisconsin, June 1913. 136 p. (Engineering series Vol. 7, No. 2, pp.117-254.)**

Folder 73.4 ***Hydraulic turbines,*** **I.P. Morris Division, Baldwin-Southwark Corp., Philadelphia, May 1936. 1 v. (unpaged) (Bulletin 100)**

Folder 73.5 ***Hydraulic turbine handbook; principles of design, practical problems of speed and pressure regulation,*** **by Arnold Pfau, Allis-Chalmers Mfg. Co., 1943.**

Physical Description: 66 p.

Folder 73.6 ***Inter-relation of operation and design of hydraulic turbines,*** **by Frank H. Rogers and Lewis F. Moody, 3d Annual Hydro-Electric Conference, Philsdelphia, 1925.**

Physical Description: 18 p.

Folder 73.7 ***New experimental contribution to the study of laws of similitude of hydraulic turbines,*** **by A. Tenot, translated by L.S. Holt, from *Revue Generale de l'Hydraulique,* Jan.-Feb.1937, Vol.13, pp.3-17, and March-April 1937, Vol.14, pp.61-69.**

Folder 73.8 ***Theory of the turbine,*** **by Hans Lorenz, Technischen Physik, 1910.**

Physical Description: 7+ p. (typescript, blueprints)

Folder 73.9 ***The recent development of construction in water turbines and pumps,*** **by Fr. Oesterlen, translated by Joseph F. Staufer, from *Deutsche Wasserwirtschafts,* Heft 3, 1935, pp.1-8.**

Folder 73.10 ***Economic draft-tube proportions,*** **by A.R. Dawson, *Transactions of the A.S.M.E.,* April 1941. pp.239-244.**

Folder 73.11 ***Courbes caracteristiques du fonctionnement des turbines hydrauliques,*** **par Louis Bergeron, Congres International de Mecanique Generale [n.d.] pp.138-144.**

Folder 73.12 ***IX. Hydrodynamische methoden der turbinentheorie,*** **von Bruno Eck, Jolubuch des Wessenschofthchen Guellschoft fur Tuft Fohut, 1925. pp.107-113.**

Folder 73.13 **"Benoit Fourneyron (1802-1867), " by Frederic W. Keator, *Mechanical Engineering,* April 1939. pp.295-301.**

Folder 73.14 ***A better method of representing and studying water-turbine performance,*** **by R.A. Sutherland, *Transactions of the ASME,* Oct.1946. pp.675-686.**

Folder 73.15 **[Miscellaneous items and articles on turbines. 1939]**

Physical Description: 1 folder.

IMPULSE TURBINE

Box Box 12, Folder 74.1 ***The 62,000 hp, vertical, six-nozzle, impulse turbines for the Bridge River hydro development of the British Columbia Electric Railway Company, Ltd.*** **, by W.F. Boyle and I.M. White, The Pelton Water Wheel Company, San Francisco, 1949.**

Physical Description: 16 p.

Folder 74.2 ***Efficiency analysis of Pelton wheels,*** **by Robert Lowy,** ***Transactions of the A.S.M.E.,*** **August 1944. pp.527-538.**

Folder 74.3 ***The Pelton water wheel, I-Developments by Pelton and others prior to 1880,*** **by W.F. Durand,** ***Mechanical Engineering,*** **June 1939. pp.447-454. (Includes** ***..., II-Developments Doble and others, 1880 to date,*** **pp.511-518.)**

Folder 74.4 ***Problems encountered in the design and operation of impulse turbines,*** **by Ray S. Quick,** ***Transactions of the ASME,*** **Jan. 1940. pp.15-27.**

Folder 74.5 ***Impulse turbines,*** **by M.P. O'Brien, for Mechanical Engineering 126, University of California, Department of Mechanical Engineering, Spring 1938.**

Physical Description: 1 v. (various pagings)

FRANCIS TURBINE

Box Box 13, Folder 75.1 ***Francis or impulse; the influence of wear and operating conditions,*** **by A. Puyo, Grenoble, July 1949.**

Physical Description: 28 *l.* (typescript)

Folder 75.2 ***Nantahala turbine,*** **by J.P. Growdon, R.V. Terry and H.H. Gnuse, Jr., *Transactions of the ASME,* October 1946. pp.687-700.**

Folder 75.3 ***Design of the 37,500-hp turbines in Niagara; hydraulic problems of the design,*** **by George R. Shepard and Norman R. Gibson, *Engineering News-Record,* Vol.85, No.14, Sept.30, 1920. pp.646-652.**

Folder 75.4 ***Test characteristics of a combined pump-turbine model with wicket gates,*** **by R.V. Terry, and F.E. Jaski, *Transactions of the ASME,* November 1942. pp.731-744.**

Folder 75.5 ***The Grand Coulee Dam and the Columbia Basin Reclamation Project,*** **by S.E. Hutton, *Mechanical Engineering,* Sept.1940. pp.651-660.**

Folder 75.6 ***Penstocks for the Grand Coulee Dam,*** **by P.J. Bier, *Transactions of the A.S.M.E.,* April 1941. pp.219-227.**

Folder 75.7 ***Control gates for Grand Coulee Dam,*** **by P.A. Kinzie, American Society of Mechanical Engineers, Sept.1940.**

Physical Description: 7 *l.*

PROPELLER TURBINES

Box Box 13, Folder 76.1 ***A generalized vortex theory of the screw propeller and its application,*** **by Hans Reissner, National Advisory Committee for Aeronautics, Washington, D.C., Feb.1940. 33+** ***l.*** **(Technical note no. 750)**

Folder 76.2 ***The Kaplan turbines at Bonneville,*** **by Paul L. Heslop, and George A. Jessop,** ***Transactions of the ASME,*** **Feb.1939. pp.97-108.**

Folder 76.3 ***European high specific speed [propeller turbines development,*** **[n.p.] 1926. 1 folder (includes typescript and handwritten notes, graphs, tables.)**

Folder 76.4 ***Hydraulic machinery: propeller turbines,*** **by M.P. O'Brien, for Mechanical Engineering 126, University of California, Department of Mechancal Engineering, Berkeley, Spring 1938.**

Physical Description: 1 folder.

Folder 76.5 **[Folder entitled** ***Kaplan turbines*****, including articles, notes, miscellaneous material on propeller turbines. 1921-1931.]**

Folder 76.6 ***The Safe Harbor hydroelectric development,*** **1941 Spring Meeting, American Society of Civil Engineers, Baltimore, Md., April 23-25, 1941.**

Physical Description: 46 p.

Folder 76.7 ***Kaplanturbinens teori,*** **by K. Axel Ahlfors,** ***Teknisk Tidskrift,*** **Hafte 7, July 1932. pp.77-86.**

Folder 76.8 ***Turbine discharge metering at the Safe Harbor hydroelectric development,*** **by J.M. Mousson,** ***Transactions of the ASME,*** **July 1941. pp.369-384.**

TURBINES-MISCELLANEOUS

Box Box 13, Folder 77.1 ***The Banki turbine,*** **by C.A. Mockmore and F. Merryfield, ASME, Aeronautics and Hydraulics Divisions [n.d.] pp.75-82.**

Folder 77.2 **[Handwritten notes and design of Banki turbine, by Ronan, Sept. 1933.]**

Physical Description: 1 folder (unpaged)

Folder 77.3 ***The Banki turbine,*** **by Percy B. Dawson, Jr., for M.E. 131B, University of California, Department of Mechanical Engineering, April 1935.**

Physical Description: 14 *l.* (typescript)

Folder 77.4 ***Commercial application of the Banki turbine,*** **by Fred H. Rued, for M.E. 131B, University of California, Department of Mechanical Engineering, April 1935.**

Physical Description: 9 *l.* (typescript)

Folder 77.5 ***Banki turbine [log],*** **prepared for HE 57, University of California, 1935.**

Folder 77.6 ***Leakage loss in turbine blading,*** **by F. Salzmann [also includes notes, articles on subject, n.d.]**

Physical Description: 1 folder.

Folder 77.7 ***Untersuchung einer Radialturbine, ein Beitrag zur Ermittlung der Winkelübertreibung,*** **by Richard Dziallas, dissertation, Technischen Hochschule Hannover, 1935.**

Physical Description: 69 p.

Folder 77.8 **[Handwritten notes on turbine draft tubes by C. Voetsch. n.d.]**

Physical Description: 1 folder (unpaged)

Folder 77.9 ***Draft tube tests,*** **by the Hydraulic Power Committee, 1930.**

Physical Description: 18 p.

Folder 77.10 ***Waterwheel testing and operating records of plant discharge,*** **National Electric Light Association, Hydraulic Power Committee, March 1928. 33 p. (Publication no.278-34)**

Folder 77.11 ***Mechanics of hydraulic-turbine pressure regulation,*** **by Arnold Pfau, *Transactions of the ASME,* December 1929. pp.29-53. (HYD-52-4)**

Folder 77.12 ***Changing requirements in hydraulic turbine speed regulation,*** **by Forrest Nagler, *Transactions of the ASME,* December 1929. pp.13-24. (HYD-52-2)**

Folder 77.13 ***Methods of increasing head on turbines by means of excess flow,*** **National Electric Light Association, Hydraulic Power Committee, New York, Dec.1926. 15 p. (Publication no.267-10)**

Folder 77.14 ***Red River, Denison Dam and Reservoir Powerhouse; notes on surge tank hydraulic design and analysis,*** **by R.G. Hornberger and J.P. Herak [n.p., Oct.1942.]**

Physical Description: 10 p. (blueprints)

Folder 77.15 ***Recent developments in Francis turbines,*** **by Wm. J. Rheingans, *Mechanical Engineering,* March 1952. pp.189-196.**

Folder 77.16 ***See*** **73.6**

Folder 77.17 **"Report of the Hydraulic Power Committee, 1924, Technical National Section, including report on control and outlet works," prepared jointly with the Pacific Coast Electrical Association to be presented at the forty-seventh convention, Atlantic City, N.J., May 19-23, 1924, National Electric Light Association, New York. 146 p. (Publication no.24-28)**

Folder 77.18 ***Hydro-power; the development of energy generation by means of hydraulic turbines,*** **by F.H. Rogers, *Baldwin-Southwark,* Vol.II, No.3, May 1938. pp.14-23.**

Folder 77.19	***Lilla edits kraftverk och provning av dess turbiner,*** **Tekniska Meddelanden fran Kungl. Vattenfallsstyrelsen, Ser.B, Nr.13, Mars 1927.** **Physical Description:** 52 p.
Folder 77.20	***The present trend of turbine development,*** **by Lewis F. Moody, American Society of Mechanical Engineers, New York, 1921. pp.113-1140.**
Folder 77.21	***Speed changes of hydraulic turbines for sudden changes of load,*** **by Earl B. Strowger and S. Logan Kerr, American Society of Mechanical Engineers, New York, 1926. pp.209-262.**
Folder 77.22	***Reduction of noise and vibrations in a hydraulic turbine,*** **by T. Sagawa, ASME, July 1969. 6 p. (Paper no.69-FE-4)**

PUMP-TURBINE

Box Box 13, Folder 78.1 ***Representation of pump-turbine characteristics,*** **by Louis Wozniak and G.H. Fett, ASME, New York, April 1970. 4 p. (Paper no.69-Fe-7)**

FANS-BLOWERS MANUFACTURERS CATALOGUES

Box Box 13, Folder 79.0 — ***Advance Castalu Blower Wheels,*** **Advance Aluminum Castings Corp., Chicago, Ill., [1940?]**

Folder 79.1 — ***Axial Flow Fans, Aerovent "Macheta" Airfoil Fans,*** **Aerovent Fan Company, Piqua, Ohio, c.1943.**

Folder 79.2 — ***The Sirocco Fan,*** **American Blower Corporation, Detroit, Mich., and Canadian Sirocco Company, Ltd., Windsor, Ontario, August 1938.**

Folder 79.3 — ***Single Stage Turbo Blowers,*** **Allis-Chalmers, Milwaukee, Wis., c.1940.**

Folder 79.4 — ***Multi-Stage Blowers,*** **Allis-Chalmers, Milwaukee, Wis., c.1941.**

Folder 79.5 — ***"Buf-flow" Limit-Load Axial Flow Fans,*** **Buffalo Forge Company, Buffalo, N.Y., c.1940. (Bulletin 3229-A)**

Folder 79.6 — ***"Buffalo" Limit-Load Conoidal Fans and Silent Floating Bases,*** **Buffalo Forge Company, Buffalo, N.Y. [n.d.] (Bulletin no.3099)**

Folder 79.7 — ***Buffalo "Limit Load" Conoidal Fans, Multi-Rating Tables,*** **[Buffalo Forge Company, Buffalo, N.Y., August 1938.] (F-50)**

Folder 79.8 — ***ILG Blowers; Engineering Data,*** **Ilg Electric Ventilating Company, Chicago, Ill., c.1941. (Catalog no.241)**

Folder 79.9 — ***La-Del Coal Mining Machinery - La-Del Troller Ventilating Fans,*** **La-Del Conveyor & Mfg.Co., New Philadelphia, Ohio, c.1940. (Bulletin no.116)**

Folder 79.10 — ***Herman Nelson Autovent Unit Blowers for Industrial and Commercial Ventilation,*** **The Herman Nelson Corporation, Moline, Ill., [1944?]**

Folder 79.11 — ***Performance Tables, Type Me High Speed Wheel Centrifugal Fans,*** **The New York Blower Company, Chicago, Ill., 1940.**

Folder 79.12 — ***Propellair Improved Airfoil Propeller Axial Flow Fans and Ventilating Equipment,*** **Profellair, Inc., Springfield, Ohio, 1941.**

Folder 79.13 — ***Hartzell Charavay Fans,*** **Hartzell Propeller Fan Co., Piqua, Ohio, c.1938. (Catalogue no.11)**

Folder 79.14 — ***Victory Axiflo Fans,*** **B.F. Sturtevant Co., Hyde Park, Mass., c.1942. (Catalog 460)**

Folder 79.15 — ***Silentvane Fans (Design 5),*** **B.F. Sturtevant Company, Hyde Park, Mass., c.1935. (Catalog no.381-2)**

Folder 79.16 — ***Centrifugal Compressors (Design Fourteen),*** **B.F. Sturtevant Company, Hyde Park, Boston, Mass., c.1941. (Catalog no.458)**

Folder 79.17 — ***Vane Control for Mechanical Draft Fans,*** **B.F. Sturtevant Company, Hyde Park, Boston, Mass., c.1939. (Bulletin no.446)**

Folder 79.18 — **a)** ***Inlet Vane Control for Effective and Economical Fan Control,*** **B.F. Sturtevant Company, Hyde Park, Boston, Mass., c.1937. (Bulletin no.423)**

b) ***Turbovane Fans,*** **B.F. Sturtevant Company, Hyde Park, Boston, Mass., Nov.1925. (Catalog no.330)**

Folder 79.19 — ***Multivane Fans (Design 6),*** **B.F. Sturtevant Company, Hyde Park, Boston, Mass., c.1939. (Catalog no.271-4)**

Folder 79.20 — ***Westinghouse Products for Air Handling, Air Cleaning, Air Conditioning,*** **Sturtevant Division, Hyde Park, Boston, Mass., March 1952. (Catalog 600).**

Folder 79.21 — ***Silentvane Fans (Design 6),*** **B.F. Sturtevant Company, Hyde Park, Boston, Mass., c.1938. (Catalog no.435).**

Folder 79.22 — ***Aerotor Blower Wheels,*** **Torrington Mfg. Co., Torrington, Conn., [1941]. (Bulletin no.9341)**

Folder 79.23 — ***Performance Tables Type Me, Centrifugal Fans Slow Speed Wheels,*** **The New York Blower Company, Chicago, Ill., [1940?]**

Folder 79.24 — ***Ingersoll-Rand [Catalogues] - Compressors, Blowers [etc.],*** **Ingersoll-Rand Co., New York. (Catalog no.100)**

INTERSECTING STREAMS

Box Box 13, Folder 80.0 ***Untersuchungen über den Verlust in rechtwinkeligen Rohrverzweigungen,*** **von G. Vogel, Mitteilungen des Hydraulischen Instituts der Technischen Hochschule München, Heft 2, Berlin, 1928. pp.61-64.**

Folder 80.1 ***Energy losses in divergent streams,*** **by DavidW. Chenot, for ME131B, University of California, May 31, 1949.**

Physical Description: 68 *l.* (typescript and handwritten)

Folder 80.2 ***Summary: mixing streams in closed conduits,*** **by Charles E. Lockhart, Jr., for M.E.131B, University of California, May 1946.**

Physical Description: 8 *l.* (handwritten)

Folder 80.3 ***Individual summary: mixing streams in closed conduits,*** **by A.C. Hughes, Jr., for ME131B, University of California, May 1946.**

Physical Description: 19 *l.* (typescript and handwritten)

Folder 80.4 **[Miscellaneous handwritten notes on mixing of streams and intersecting streams. 1936.]**

Physical Description: 1 folder.

Folder 80.5 **[Miscellaneous handwritten notes, correspondence, blueprints on intersecting streams. 1936-1937.]**

Physical Description: 1 folder.

Folder 80.6 ***Mixed flow in closed circular conduits,*** **by Walter Paul, for ME131B, University of California, June 1946.**

Physical Description: 9 *l.* (typescript)

Folder 80.7 ***Mixing streams in closed circular conduits,*** **by John P. Kempton and Otto Hoefler, thesis, University of California, Department of Civil Engineering, May 1939.**

Physical Description: 44 p.

Folder 80.8 ***Mixing streams in closed circular conduits: Log book,*** **by A.C. Hughes, Jr., C. Lockhart Jr., and W. Paul, for ME131B, University of California, Berkeley, May-June 1946.**

Physical Description: 33 p.

Folder 80.9 ***Pressure losses at six by four inch tee intersections,*** **by Robert A. Tuttle, for M.E.131B, University of California, June 1945.**

Physical Description: 4 *l.* (typescript)

Folder 80.10 ***Pressure drop in reducing tees, concentric reducers and elbows,*** **by A.M. Moschetti, Tube Turns Inc., rev.Aug.1951.**

Physical Description: 3 p.

Folder 80.11 ***Transactions of the Hydraulic Institute of the Munich Technical University,*** **American Society of Mechanical Engineers, New York, 1935.**

Physical Description: 116 p.

Folder 80.12 ***Results: Intersecting streams,*** **by E.A. Sorour, for ME299, University of California, 1947.**

Physical Description: 1 notebook (handwritten)

Folder 80.13 ***Losses at the junction of two streams,*** **by Clifford Sommarstrom, University of California, May 1936. 25 *l.* (typescript) [for Exp.He-4.]**

Folder 80.14 **[Handwritten notes on uniting streams. n.d.]**

Physical Description: 1 folder.

Box Box 14, Folder 80.15 **[Handwritten notes and partial typescript copy of *Intersecting streams,* by W.R. Shuler, M.S. thesis draft, University of California, 1940.]**

Physical Description: 1 folder.

Folder 80.16 **[Comparison of experimental and theoretical curves for the pressure rise across a discharge lateral. n.d.]**

Physical Description: 4 fold.sheets.

Folder 80.17 ***Chemical Engineering Progress,* Vol.44, No.9, September 1948, published by American Institute of Chemical Engineers.**

Physical Description: 54 p.

Folder 80.18 ***Energy loss for divergent flow in standard pipe tees,* by Raymond L. Hobbs, for ME131B, University of California, May 1948.**

Physical Description: 168 p. (typescript and handwritten)

Folder 80.19 ***Energy losses in divergent streams,* by David W. Chenot, for M.E.131B, University of California, May 1949.**

Physical Description: 44 p. (typescript and handwritten)

Folder 80.20 **[Notes on orifice calibrations, by El-sayed A. Sorour, for ME 299, University of California, 1947-48.]**

Physical Description: 1 v. (unpaged)

Folder 80.21 ***Intersecting streams [notes and tables],* by E.A. Sorour, for ME 299, University of California, 1947.**

Physical Description: 1 v.

Folder 80.22 ***Mitteilungen des Hydraulischen Instituts der Technischen Hochschule München,* by D. Thoma, Heft 3, Berlin 1939.**

Physical Description: 165 p.

Folder 80.23 ***Mittelungen des Hydraulischen Instituts der Technischen Hochschule München,* by D. Thoma, Heft I, Berlin, 1926.**

Physical Description: 90 p.

Folder 80.24 ***Sur les Lois Regissant le Mouvement des Fluides dans les Conduites en Charge Avec Adduction Laterale,* par Henry Favre, extrait de la *Revue Universelle* des Mines, Dec.1937, Serie 8, Tome XIII, No.12.**

Physical Description: 8 p.

SAVONIUS ROTOR

Box Box 13, Folder 81.1 **[Miscellaneous articles, notes, graphs, photos on Savonius Rotor; reports on laboratory tests; bibliography and literature articles. n.d.]**

Physical Description: 1 v.

Folder 81.2 **[Miscellaneous references and correspondence in re Savonius Rotor and wind power. n.d.]**

Physical Description: 1 folder.

Folder 81.3 **[Miscellaneous bibliographic material and advertisements on wind power. n.d.]**

Physical Description: 1 folder.

Folder 81.4 ***The S-Rotor and its applications,* by S.J. Savonius, *Mechanical Engineering,* Vol. 53, no.5, May 1931. pp.333-338.**

Folder 81.5 ***Savonius Rotor (data book),* University of California, Department of Mechanical Engineering, 1937-38. 1 v. (HE-56)**

Folder 81.6 ***Aerodynamics of the wind turbine,* by Percy H. Thomas, Federal Power Commission [n.p.], 1949.**

Physical Description: 80+ p.

Folder 81.7 ***Putting on airs,* in *Engineering Outlook,* University of Illinois, at Urbana-Champaign, Vol.16, No.10, May 1975.**

WATER TUNNEL

Box Box 13, Folder 82.1 **[Notes for design of blowdown water tunnel. 1953]**

Physical Description: 1 folder.

Folder 82.2 ***Hydrodynamic design of the 48-inch water tunnel at the Pennsylvania State College,* by Donald Ross, J.M. Robertson, and R.B. Power, The Society of Naval Architects and Marine Engineers, New York, May 1948. 18 p.(No.1).**

Folder 82.3 ***Water tunnel vaned-turn studies,* Ordnance Research Laboratory, Pennsylvania State College, Sept. 1947.**

Physical Description: 44 p.

Folder 82.4 ***The unsteady flow water tunnel at the Massachusetts Institute of Technology,* by James W. Daily, Kenneth C. Deemer and Aaron L. Keller, Massachusetts Institute of Technology, Hydrodynamics Laboratory, May 1951. 66 *l.* (Technical report no.2)**

Folder 82.5 ***A study of wing left distributions,* Ordnance Research Laboratory, Pennsylvania State University, April 1948.**

Physical Description: 23 p.

Folder 82.6 ***Airfoil information for propeller design,* Ordnance Research Laboratory, Pennsylvania State College, November 1947.**

Physical Description: 43 p.

Folder 82.7 ***Hydrodynamic deisng of 48-inch water tunnel at The Pennsylvania State College,* Ordnance Laboratory, Pennsylvania State College, February 1948.**

Physical Description: 42 p.

Folder 82.8 ***The experimental water tunnel at The Pennsylvania State College,* Ordnance Research Laboratory, Pennsylvania State College, April 1948.**

Physical Description: 40 p.

Folder 82.9 ***A study of propeller blade - surface cavitation noise,* Ordnance Research Laboratory, Pennsylvania State College, October 1948.**

Physical Description: 25 p.

Folder 82.10 ***Water tunnel diffuser flow sutdies, Part I - Review of literature,* Ordnance Research Laboratory, Pennsylvania State College, May 1949.**

Physical Description: 37 p.

Folder 82.11 ***Water tunnel diffuser flow studies, Part II - Experimental research,* Ordnance Research Laboratory, Pennsylvania State College, July 1949.**

Physical Description: 49 p.

Folder 82.12 ***Garfield Thomas water tunnel operations,* by R.B. Power, et al., Ordnance Research Laboratory, Pennsylvania State College, May 1951.**

Physical Description: 66 p.

Folder 82.13 ***Summary report on the development of a hot-wire turbulence-sensing element for use in water,* by R.G. Stevens, A. Borden, and P.E. Strausser, Navy Department, The David W. Taylor Model Basin, Washington, D.C., December 1956. 18 p. (Report 953)**

Folder 82.14 ***The water tunnel as a tool in hydraulic research,* by James W. Daily, reprinted from *Proceedings of the Third Hydraulics Conference,* Bulletin 31, University of Iowa Studies in Engineering, 1947. pp.169-191.**

Folder 82.15 ***Water tunnel working section flow studies,*** **Ordnance Research Laboratory, Pennsylvania State College, June 1948.**

Physical Description: 30 p.

RADIAL LOADS IN CENTRIFUGAL PUMPS

Box Box 13, Folder 83.1 ***Pressure distribution in the volute of a horizontal centrifugal pump,*** **by H.W. Iversen and R.E. Rolling, M.E.299, University of California, [n.d.]**

Physical Description: 1 folder (handwritten)

Folder 83.2 ***The volute pressure variation in a centrifugal pump,*** **by R. Kurosawa and A. Flittner, for M.E.131B, University of California, May 1957.**

Physical Description: 92 p. (handwritten)

Folder 83.3 ***Literature survey - velocity distribution in the volute of a centrifugal pump,*** **by R.E. Rolling, [n.p., n.d.]**

Physical Description: 1 v. (typescript)

Folder 83.4 ***Data for masters thesis - centrifugal pump, radial load,*** **by R.E. Rolling, [n.p., n.d.]**

Physical Description: 1 v. (unpaged, handwritten)

Folder 83.5 ***Centrifugal pump volute pressure distribution,*** **by Jim Carlson, for M.E.299, University of California [n.d.]**

Physical Description: 1 v. (unpaged) (handwritten)

Folder 83.6 ***Radial pressure distribution around the volute of a centrifugal pump,*** **by Robert D. Davis, and Arthur L. Austin, for M.E.131B, University of California, Spring 1956.**

Physical Description: 1 notebook (handwritten)