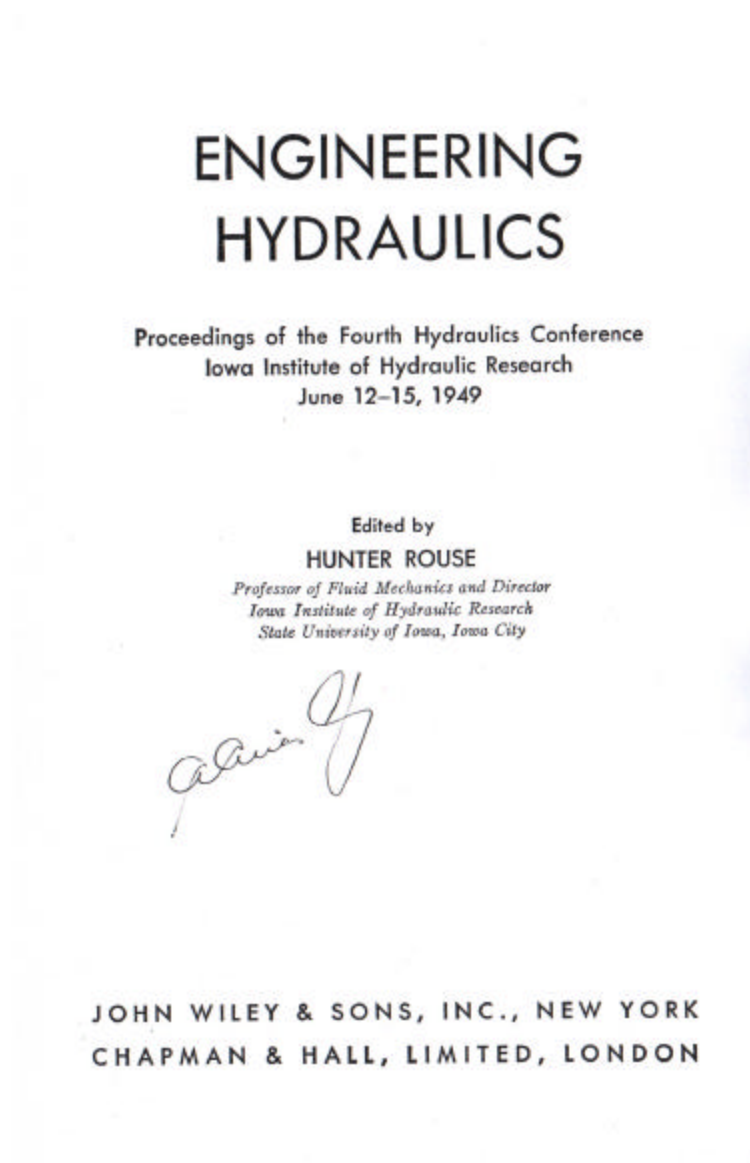


EL GRAN Don PANCHO J

Como he indicado en clases, el aporte que hizo Francisco Javier Domínguez (Don Pancho J) en el desarrollo de la Hidráulica fue inmensa. A modo de ejemplo, incluyo el prólogo del libro que editó H. Rouse (un grande de la hidráulica norteamericana del siglo XX), el que reconoce el aporte que significa el libro de Don Pancho.

Incluyo las primeras páginas del libro de Rouse.



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State University of Iowa

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To
BORIS A. BAKHMETEFF
on the seventieth anniversary
of his birth the authors
respectfully dedicate
this volume

Printed in the United States of America

PREFACE

Although American technical literature is replete with contributions to the applied science of hydraulics, this country had still produced no comprehensive reference volume on the subject as the first half of the century neared an end. For the detailed principles of analysis required in many design problems, hydraulic engineers had recourse only to college textbooks, handbooks, and office manuals, or to such foreign works as Forchheimer's *Hydraulik*, Gibson's *Hydraulics and Its Applications*, and perhaps Flamant's *Hydraulique*. Indeed, the recent publication of Domínguez' *Hidráulica* and Jaeger's *Technische Hydraulik* only emphasized the inadequacy of our own literature in this field. Extensive treatises on hydraulic engineering had been written in the United States, to be sure, but never a thoroughgoing presentation of engineering hydraulics in its own right.

As the fourth in its series of triennial hydraulics conferences, therefore, the Iowa Institute of Hydraulic Research arranged a group of technical sessions with the specific aim of bringing such a book into existence. On the basis of preliminary discussions, the senior staff of the Institute divided the field into thirteen interrelated subjects, and, guided by advice from its Board of Consultants, in 1947 invited authorities on the various subjects to prepare papers representing consecutive chapters of the book. After outlines and tentative drafts had initially been correlated, the manuscripts were written and submitted in 1948, carefully edited to the end of further correlation, and then preprinted in time for distribution to the conference registrants in the spring of 1949.

The primary purpose of the conference itself, attended by 425 engineers from 40 states and 12 foreign countries, was the critical review of the chapter preprints. Discussion of the undertaking as a whole and of Chapter I in particular was led by Boris A. Bakhmeteff of Columbia University. Leaders for the twelve other chapter discussions were the following: Warnock's Chapter II, Edward Soucek of the Corps of Engineers; Howe's Chapter III, C. G. Paulsen of the U. S. Geological Survey; Williams' Chapter IV (presented in the author's absence by his colleague, G. T. McCarthy), W. W. Horner of Horner and Shifrin; Jacob's Chapter V, J. G. Ferris of the U. S.

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TRADUCCION Y COMENTARIOS DEL PROFE

Aunque la literatura técnica (norte)americana está llena de contribuciones a la ciencia aplicada de la hidráulica, hasta casi la mitad del siglo (XX), este país todavía no ha producido ningún volumen de referencia extenso en el tema. Para los principios de análisis detallados que se requieren en muchos problemas de diseño, los ingenieros hidráulicos tienen que recurrir sólo a textos universitarios, o a trabajos extranjeros, tales como el *Hydraulik* de Forchheimer (alemán), el *Hydraulics and Its Applications* de Gibson (inglés) y quizás a la *Hydraulique* de Flamant (francés). De hecho, la reciente publicación de la ***Hidráulica de Domínguez*** y del *Technische Hydraulik* de Jaeger (alemán) ha sólo enfatizado lo inadecuado de nuestra propia literatura en este campo. Se han escrito extensos tratados de ingeniería hidráulica en los Estados Unidos, es cierto, pero nunca una presentación tan completa de ingeniería hidráulica.

Comentarios:

La primera edición del libro de Don Pancho es de 1935 (antes había aparecido por capítulos en los *Anales del Instituto de Ingenieros*). O sea, ya llevaba 15 años de ventaja cuando Rouse escribió el Prefacio de su *Engineering Hydraulics*. La última edición de la *Hidráulica* fue en 1978, la que se reimprimió en 1999. En todas las ediciones, Don Pancho agregaba los últimos resultados de sus memoristas.

Don Pancho se tituló de Ingeniero Civil de la Universidad Católica en 1917 con la Tesis Teórica Experimental: "Escurrimiento crítico producido por angostamientos", Tesis que la Universidad hizo publicar.

Don Pancho comenzó su interés y aporte experimental a la Hidráulica desde su época de estudiante de ingeniería. En 1916, otro grande de la ingeniería chilena, don Ramón Salas Edwards, propuso a su alumno que experimentara con el escurrimiento crítico que se produce en un estrechamiento, sin variación de cota de fondo. Posteriormente, el Prof. Salas descubrió que en un canal, el Bernuilli mínimo, medido desde el fondo (lo que en el curso llamamos E), se produce con una velocidad igual a la de las ondas de traslación y con una altura que ahora llamamos altura crítica ($c=(gh_c)^{1/2}$). Don Pancho verificó experimentalmente las conclusiones de su profesor. En 1924, Forcheimer le escribió una carta a Don Pancho en la que expresaba su admiración por estas investigaciones.

Geological Survey; Streeter's Chapter VI, J. M. Robertson of The Pennsylvania State College; McNown's Chapter VII, L. H. Kessler of Northwestern University; Ippen's Chapter VIII, C. F. Izzard of the Public Roads Administration; Posey's Chapter IX, R. W. Powell of the Ohio State University; Gilcrest's Chapter X, J. S. Bowman of the Tennessee Valley Authority; Keulegan's Chapter XI, E. P. Fortson of the Waterways Experiment Station; Brown's Chapter XII, G. H. Matthes of New York; and Daily's Chapter XIII, G. F. Wislicenus of The Johns Hopkins University.

After each prepared discussion, numerous comments on the chapters were made from the floor, and cards were distributed among the participants to encourage the submittal of written criticisms. Some 160 of these cards were eventually returned, and perhaps a dozen extensive reviews were received in letter form. During the year which has elapsed since the conference sessions, the authors and editor have carefully considered every suggestion and have themselves contributed as many more. Identical proposals received from a number of independent sources were invariably followed. Isolated criticisms of a pertinent nature (of which there were many) were judged on merit and generally accepted. Only those proposals which conflicted with one another or seemed contrary to the purpose of the book were finally disregarded. Thanks to such thorough scrutiny by many typical readers in advance of publication, every chapter has been considerably revised, with the result that the book is now at a stage which is usually reached only in the second or third edition.

Throughout this collaborative undertaking, a concerted effort has been made to produce the type of publication originally proposed: an authoritative and up-to-date treatise on engineering hydraulics. Although the volume may well be used in many graduate courses, and although it most assuredly contains a wealth of factual information, its primary purpose is not that of either a textbook or a handbook. Neither is it intended to provide an exhaustive treatment of any particular phase of the subject—indeed, a book in itself could have (and in many instances already has) been written on the subject matter of each chapter. Nevertheless, while the specific aim has been to present as clear and comprehensive a treatment of every phase as either the general engineer or the specialist in another phase may require for reference, it is hoped that even the specialist may find little fault with the treatment of his own field beyond that of necessary condensation.

Too much credit cannot be given to the authors themselves for their consistently amiable collaboration, often in spite of extensive editorial

privileges assumed by the writer. To the grief of all, one author, Jacob Warnock, did not live to see the culmination of this joint endeavor. Three Institute colleagues of the writer, Professors J. W. Howe, C. J. Posey, and J. S. McNown, participated in the venture from the time of its inception, with the constant encouragement of Dean F. M. Dawson. In addition to arranging most of the conference details, Professor Howe read every word of proof from one to many times. Dr. McNown in particular gave much needed support and counsel in essentially all phases of writing and production. Few members of the Institute staff, in fact, did not have some part in the book, those who contributed extensively to the composition or revision being mentioned in the respective acknowledgments. Special commendation is due the Institute secretaries, Miss Leona Amelon and Miss Alice Edwards, through whose hands or typewriters passed every page of manuscript and proof. Without the willing cooperation of the publishers, of course, neither the preprints (a novel and costly departure from publishing practice) nor the final volume could have appeared either on schedule or in such admirable form.

Particularly appropriate at this time is the authors' dedication of their handiwork to Boris A. Bakhmeteff. A stimulating teacher, lucid writer, able consultant, and willing mentor, he has had an influence on American hydraulics which few are ever likely to surpass. On May 14, not long before the appearance of this volume (in the development of which he played an interested advisory role), he attained his seventieth year with no apparent abatement of either productiveness or zeal. This anniversary dedication is thus a well-merited tribute of appreciation, affection, and respect.

HUNTER ROUSE

*Iowa City, Iowa
August, 1950*