Suggested examples are added to each chapter for further study, but the student reader may need the guidance of a tutor as solutions to the problems are not given. The units used throughout the book are Imperial/North American.

The text appears at first sight to be congested. This is due in part to the extensive descriptive material and to the fact that the print, and the sketches, are relatively small. However, this keeps the book to a reasonable size (250 pages, Octavo)

and once one has adjusted to the format, the text is eminently readable and the overall presentation is clear. The method used for emphasising certain words or phrases by underlining them is visually unattractive. The binding, in hard back, is sound.

D. L. Smith ICI Ltd, Cleveland, UK

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Centrifugal pump clinic

I. J. Karassik

Compared to a conventional text, this is a somewhat unusual book; its basis was some queries the author received on problems in centrifugal pumps, which later appeared as a series of articles. The questions and answers were mainly to allow the readers to improve the operation and installation of their plant.

This book, then, is a selection of these articles and in consequence appears as a series of questions and answers, roughly gathered together in chapters on applications, pump construction, installation, maintenance and field troubles. Thus, the readers who would benefit are plant engineers and design engineers, rather than those with academic or theoretical leanings. The author also includes recent graduates in those that could benefit from its use.

Nearly 200 problems are detailed, ranging from an explanation of suction specific speed to installation questions such as how to arrange suction piping. Equal balance is given to hydraulic problems such as cavitation, pump selection and mechanical matters and plant installation.

Personally I don't like the format as the author has had to include a lot of text book material in his problems to offer a satisfactory explanation. This I feel, would be better written as a section of text with the problems following as examples. Likewise, the layout adopted means the facts are mixed up with the authors opinion and advice, with some of which, for instance the conditions for cavitation damage, I would not agree. He also reiterates old definitions

of cavitation inception, which is perhaps because he quotes references of 1937 vintage. The format also leads to great difficulty in tracing specific topics without reading the whole book each time. This is not helped by an incomplete index at the back.

Despite these criticisms, there is an enormous amount of most useful information given that is rarely found in other books. Although the items such as trimming impeller dimensions to get a specific head or flow is very useful, the reviewer especially appreciated the information not easily found elsewhere. This clearly includes much of the authors advice and opinions on design and installation, but also such things as the effect of altitude on NPSH, information on wear ring clearances and the effect of wear on the performance characteristics. Another useful topic was the operation of two pumps in series or parallel, and the differences involved as to whether the pumps had steep or flat characteristics, an important aspect which is usually ignored.

Whether looking for data on specification, technical factors or mechanical aspects, engineers involved in the practical side of centrifugal pumps will find this a valuable addition to their bookshelves.

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