SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE

U. S. Fish and Wildlife Service

Mr. Rat
See Page 298

A SCIENCE SERVICE PUBLICATION

Fishing Btu's from fluid streams

A heat exchanger can catch escaping thermal energy.
For example, it more than doubles the efficiency of gas
turbines by recovering exhaust heat. But predicting its
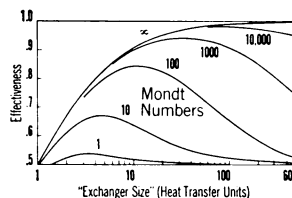performance is a subtle and often perplexing art.

To put heat exchanger design on a more scientific basis,
our thermally inclined colleagues at the Laboratories
have been developing—and experimentally verifying —
better ways of analyzing its behavior. One result is a new
conduction parameter for the thermodynamicist's kit
of tools. Dubbed the Mondt number by fellow staff
members, it neatly explains why increasing the size of a
heat exchanger does not necessarily improve effectiveness
(see graph). The reason: longitudinal conduction losses ma
more than offset the expected gain in performance.

Or say you're interested in thermal distortions and stresses
of metals, or in sealing the leakage of counterflowing
gases. We are. Another analytical advance has enabled us
to compute the transient and steady-state temperature
distribution in the solid and in both fluid streams. With it
most any heat exchanger can be simulated on a
digital computer.

These fundamental studies are aiding the understanding
of heat transfer—in theory and in engineering practice.
They illustrate General Motors' constant search for a
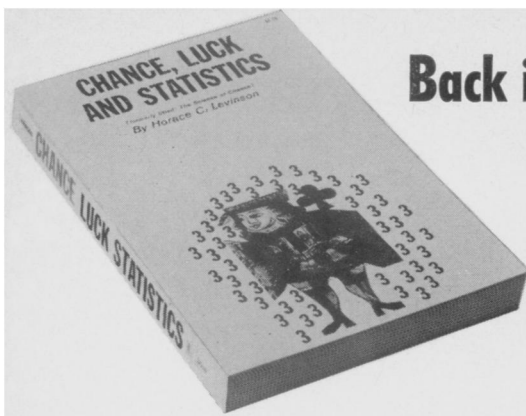better way—through research in depth.

General Motors Research Laboratories
Warren, Michigan

The Mondt number
is the ratio of
convective heat
transfer rate to
conductive rate.

View through an experimental
heat exchanger matrix.

Back in print at last! One of the finest popular introductions to theory, meaning, use of probability and statistics!

CHANCE, LUCK AND STATISTICS

by Horace C. Levinson   Paperbound, only $1.75

Have you ever found yourself wondering about the meaning of the words, "probability" and "statistics," and about the role these two important concepts play in your life? If you would like to look behind the confusion of popular notions and definitions, it is no longer necessary to turn to advanced technical treatises that fail to tie theory to everyday life. You can turn, instead, to this newly revised edition of one of the most remarkably lucid books on the subject.

Dr. Levinson will surprise you with how much he will teach even those readers with very spotty mathematical training—and with how interesting he can make the learning process. By analyzing games of chance, you will pick up the fundamentals of the subject. The concepts thus entertainingly developed are then applied to the interpretation of statistics relevant to sports, business, and other fields.

The first part of the book, on the theory of chance or probability, explodes many of the odd superstitions people hold in regard to "luck," reveals fallacies in the popular concept of probability, and discusses the meaning of betting odds, the law of mathematical expectation, the inevitable advantage the "bank" holds over the gambler, and specific applications of probability laws in poker, roulette, lotteries, dice games, bridge,

and other games of chance. The second part moves from probability to its applications in statistics, but the stress remains on everyday experience. Dr. Levinson discusses the basic problems in statistics, the dangers inherent in its misuse, the concept of statistical probability, normal and skew frequency distributions, and statistics applied to various fields: strategic warfare, sports, birth and death rates, immigration, stock speculation, insurance rates, operations research, advertising, and so on.

One of the reasons that the author has been so completely successful in explaining his subject non-technically and in analyzing its uses is that he has worked actively for many years as a consultant and adviser to business and industrial organizations. His training in abstract fields of mathematics is combined with actual experience with applied probability concepts, making him the perfect man for introducing you to the theory and applications of probability.

For Scientists . . . General Readers . . . Mathematicians!

In addition to a sure grasp of the subject and an ability to communicate his information in a thoroughly enjoyable format, Dr. Levinson also has a warm sense

of humor that will ease your introduction to what is too often a dry area of study. Non-mathematicians will read it with both profit and pleasure, while students and teachers of technical courses on theory will find it the finest source of collateral reading material, relating theory to experiences relevant to our everyday lives. Anyone in the sciences, taking required statistics courses or simply interested in the uses of statistics in his special field will be grateful for the delightful way this book does its thorough, accurate job.

"Written on a topic which is of broad interest and importance. The style is clear and lively. The treatment is remarkably accurate. In short, it is a good book," Scientific Monthly. "Presented in an easy, humorous style, which I consider the very best kind of expository writing," Prof. A. C. Cohen, Industrial Quality Control. "Discusses the concepts of elementary probability theory and their role in everyday affairs and statistics in concise, forceful, simple language . . . Excellent supplementary reading material," Prof. S. S. Wilks, Princeton University.

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