Poiseuille flow as x increases: v is reduced to zero and u becomes parabolic.

A further calculation was carried out with the values of (45), but a small non-zero value of w, proportional to $r(1 - r)$, was introduced at $x = 0$. w was eventually damped out and the same uniform state was reached as before.

The program for these problems was written in Mercury Autocode. Each step of the solution in the x-direction took about 90 seconds.

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Book reviews: Mathematical tables

Handbook of Mathematical Tables. Edited by S. M. SELBY, 1962; x + 580 pages. (Cleveland, Ohio: *Chemical Rubber Publishing Co.*,$ 7.50 in U.S.A., $8 outside U.S.A.)

This book of tables originated as a section in the *Handbook of Chemistry and Physics*, which has passed through many editions. It has now, for the first time, become a fully-fledged book, still labelled as *Supplement* to the *Handbook*.

It is impossible to do justice to this large and widespread collection of material in a brief notice; one can only pick out some characteristic points.

There are the usual familiar tables of elementary functions, but 4-, 5- and 6-place tables of Common Logarithms are *all* present, for the best convenience of a variety of users, as well as a table of Natural Logarithms. Trigonometric and Circular Functions are given for arguments in degrees and minutes, in degrees and decimals, and for radian argument, and other familiar functions, Powers, Roots, Reciprocals, etc., are also represented, as also are Factors, Primes and Interest Tables.

There are Statistical Tables including t- and F-tests for Significance, and tables of the Binomial and Poisson Distributions. Then there are tables of the Gamma, and Elliptic functions, of Sine, Cosine, Exponential Integrals, of Legendre, and some Bessel Functions.

Besides the Tables there are extensive lists of formulae in many branches of mathematics—we mention the substantial Table of Integrals, Formulae in Algebra, including Algebra of Sets, Integral Domains, Groups, Fields and Rings, and Series expansions, etc., and many Trigonometrical formulae.

A special section on Planetary Orbits is perhaps topical in the space age.

Perhaps the items listed will give some small idea of the wealth of material contained. The book is substantial, well printed and well bound, and many users will find it useful.

J. C. P. MILLER.

Tables of Lamé Polynomials, by F. M. ARSCOTT and I. M. KHABAZA, 1962; xxxii + 79 + 66 + 66 + 66 + 66 + 66 + 66 + 52 pages. $8\frac{1}{2}$ in. × 11 in. (Oxford, London, New York and Paris: *Pergamon Press*, £7.)

This is a modern set of tables produced on an automatic computer—in fact a Ferranti Mercury—and reproduced photographically from sheets produced by the computer.

The tables are preceded by a brief summary of the Theory of Lamé polynomials, and short notes on the method of computation and use of the tables, and on the computer program.

The equation

$$\frac{d^2w}{dz^2} + \left\{h - n(n+1)k^2 \operatorname{sn}^2 z\right\}w = 0$$

possesses solutions in finite terms when n is an integer and h has one of a set of $(2n + 1)$ eigenvalues. There are eight types

$$w = \operatorname{sn}^\rho \operatorname{cn}^\sigma z \operatorname{dn}^\tau z\, F(\operatorname{sn}^2 z)$$

with each of ρ, σ, τ independently 0 or 1 and $F(x)$ a polynomial in x, of degree $\frac{1}{2}(n - \rho - \sigma \ \tau)$. Here $\operatorname{sn} z$, $\operatorname{cn} z$, $\operatorname{dn} z$ are Jacobian elliptic functions.

The tables give 6-figure values of the coefficients in these polynomials, for degrees n up to 30, with $C = k^2 = 0{\cdot}1\,(0{\cdot}1)\,0{\cdot}9$ for each of the eight types. Also given is the corresponding eigenvalue for each polynomial.

The layout of the tables could be improved. For purposes of programming easily, a standard layout has been chosen so that the automatic computer could produce the final pages directly. It is, however, more wasteful of space than it might have been and so less compact and thus a little less easy to use. The layout is, however, straightforward and quite clear —which is a distinct advance on a number of computer-produced tables.

The photographic reproduction leaves something to be desired; there is some variation in blackness, but the main defect is a variation in thickness and a woolly look to many of the printed digits, possibly due to non-uniformity of the copy from which the tables were produced. The figures, with head-and-tail type, are, however, very legible.

This book usefully places these polynomials on record, and refers to an extension of the tables, for degrees n from 31 to 60, held in the Depository of Unpublished Mathematical Tables at the Royal Society.

All the more comprehensive libraries of mathematical tables should have this book of standard, though fairly advanced, functions on their shelves.

J. C. P. MILLER.