and waiting time, epidemiology, particle physics, turbulence, prediction, information theory, time series, etc. There are a number of illustrative numerical examples.

DONALD A. DARLING

Numerische Behandlung von Differentialgleichungen. By L. Collatz. Berlin, Springer, 1955. 15+526 pp., with 118 illustrations and a portrait. Paperbound, 56 DM.; clothbound, 59.60 DM.

The first edition of Collatz's Numerische Behandlung (reviewed in this Bulletin, vol. 59, pp. 94–96) was noteworthy as the most extensive and most complete treatment of the numerical solution of differential equations that had yet appeared. The second edition now at hand continues to maintain this leadership. It is still larger (526 pages) and has undergone considerable reorganization. A major part of the reorganization consists in the insertion of a new chapter at the beginning devoted to basic material needed later, such as finite differences, interpolation, formulas for numerical differentiation and integration, Green's theorem and related topics, least squares, orthogonality, and concepts from functional analysis. The remaining five chapters cover substantially the same material as in the first edition except for the topics now collected in Chapter I and the expansion of the remaining topics by more detailed treatment and the addition of new items. The high character of the first edition has been well preserved.

W. E. MILNE

Curso de análisis matemático. Vol. 3. By C. de Losada y Puga. Lima, Universidad Católica del Perú, 1954. 22+814 pp.

This final volume of Professor de Losada y Puga's treatise covers trigonometric series, divergent series, functions of a complex variable, differential equations, calculus of variations (very briefly) and probability. The exposition is for the most part at the advanced calculus level, and in a leisurely and readable style. The section on differential equations (350 pages) is more up-to-date and detailed than many textbooks on the subject in English.

R. P. BOAS, JR.

Opere. Vol. 3, *Sistemi tripli ortogonali*. By L. Bianchi. Ed. by the Unione Matematica Italiana with the assistance of the Consiglio Nazionale delle Ricerche. Rome, Cremonese, 1954. 6+851 pp. 7500 lire.

For the first two volumes cf. this Bulletin, vol. 60, p. 288.

Collected works. By G. A. Miller. Vol. 4. Urbana, University of Illinois, 1955. 12+458 pp. $7.50.

This volume covers publications from 1916 to 1929.

Tables of the cumulative binomial probability distribution. By the Staff of the Computation Laboratory. Cambridge, Harvard University Press, 1955. 61+503 pp. $8.00.

The function $\sum_{x=r}^{n} C_{n,x}p^x(1-p)^{n-x}$ is tabulated to 6 decimals for n at various intervals up to 1000 and for 60 values of p. A long introduction explains the applications of the function.

The real projective plane. By H. S. M. Coxeter. 2d ed. Cambridge University Press, 1955. 12+226 pp. $4.75.

This is a revision of the first edition, which was reviewed in this Bulletin, vol. 56, p. 376.

Science awakening. By B. L. van der Waerden. Trans. by A. Dresden with additions of the author. Groningen, Noordhoff, 1954. 4+306 pp. $5.00 or 19 florins.

As the title does not suggest, this is a book about ancient Egyptian, Babylonian and Greek mathematics. For a detailed review of the Dutch edition of 1950, see Mathematical Reviews, vol. 12, p. 381. The present edition is sumptuously illustrated.

Lectures on functions of a complex variable. Ed. by W. Kaplan with the assistance of M. O. Reade and G. S. Young. Ann Arbor, University of Michigan Press, 1955. 10+435 pp. $10.00.

This volume contains, in 31 articles, the proceedings of the Conference on Functions of a Complex Variable which was held at the University of Michigan in 1953.

Second colloque sur les équations aux dérivées partielles. Tenu à Bruxelles du 24 au 26 mai 1954. Liège, Thone; Paris, Masson, 1955. 132 pp. 200 Belgian fr. or 1500 French fr.

The colloquium was sponsored by the Centre Belge de Recherches Mathématiques. The volume contains articles by Picone, Schwartz, Lions, Leray, Brelot and Choquet, de Rham, Garnir, and Fantappiè.

The Computer Director, June 1955. New York, Berkeley Enterprises, Inc. 162 pp.

This is vol. 4, no. 6, of the journal *Computers and Automation*; it contains a directory of people and organizations active in the field.

Cinquant' anni di relatività, 1905–1955. Ed. by M. Pantaleo. Firenze, Editrice Universitaria, 1955. 50+634 pp.

This volume contains, besides a preface by Einstein and a general introduction by the editor, articles by A. Aliotta, G. Armellini, P. Caldirola, B. Finzi, G. Polvani, F. Severi, and P. Straneo, and translations into Italian of seven of Einstein's papers.

RESEARCH PROBLEMS

1. John Nash: *Generalized Brouwer Theorem.*

Define a "connectivity map" from a space A into a space B as one such that the induced map $A \to A \times B$ preserves the connectedness of any connected set in A. Must every connectivity map of a cell into itself have a fixed point? (Received August 24, 1955.)

2. C. S. Herz: *The Bohr spectrum of bounded functions.*

Let ϕ be a bounded, uniformly continuous function on the real line. Is it true that for almost all t, $\lim_{N\to\infty} (2N)^{-1}\int_{-N}^{N} \exp(-itx)\phi(x)dx = 0$? (Received October 10, 1955.)

3. J. L. Brenner: *Group Theory.*

Find the (algebraic) real values of m (between 0 and 2) for which the matrices $\binom{1,0}{m,1}$, $\binom{1,m}{0,1}$ do not generate a free group. 1. When m is transcendental the group is known to be a free group. 2. When m is real and greater than or equal to 2 the group can be shown to be a free group.) (Received October 20, 1955.)

4. H. L. Alder: *Number theory.*

Let $q_d(n)$ = the number of partitions of n into parts differing by at least d; let $Q_d(n)$ = the number of partitions of n into parts congruent to 1 or $d+2$ (mod $d+3$); let $\Delta_d(n) = q_d(n) - Q_d(n)$. It is known that $\Delta_1(n) = 0$ for all positive n (Euler's identity), $\Delta_2(n) = 0$ for all positive n (one of the Rogers-Ramanujan identities), $\Delta_3(n) \geqq 0$ for all positive n (from Schur's theorem which states $\Delta_3(n)$ = the number of those partitions of n into parts differing by at least 3 which contain at least one pair of consecutive multiples of 3). a. Is $\Delta_d(n) \geqq 0$ for all positive d and n? b. If (a) is true, can $\Delta_d(n)$ be characterized as the number of a certain type of restricted partitions of n as is the case for $d = 3$?

References

1. D. H. Lehmer, *Two nonexistence theorems on partitions*, Bull. Amer. Math. Soc. vol. 52 (1946) pp. 538–544.

2. H. L. Alder, *The nonexistence of certain identities in the theory of partitions and compositions*, Bull. Amer. Math. Soc. vol. 54 (1948) pp. 712–722.

(Received October 24, 1955.)

5. V. L. Klee: *Topology.*

A topological space S is called *homogeneous* provided for each two points x and y of S there is a homeomorphism h of S onto S such that $hx = y$. Clearly each product