obtained from a given one-step method by averaging the last k-iterates. Results on the domains of convergence and acceleration are obtained, both of which may be much larger than the domain of convergence of the original method.

4. WACKER, H. J.: *A method for nonlinear boundary value problems.* To solve the operator equation $T(y) = 0$, the problem is embedded in a family $T(s, y) = 0$ with $0 \leqq s \leqq 1$, and such that $T(0, y) = 0$ is easily solvable, and such that $T(1, y) = T(y)$. For a sequence of s's, the solution for s_i can be used as a starting value for the computation at s_{i+1}.

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18[2.10].—V. I. KRYLOV & A. A. PAL'TSEV, *Tables for Numerical Integration of Functions with Logarithmic and Power Singularities*, translated from Russian, Israel Program for Scientific Translations, Jerusalem, 1971, iv + 172 pp., 25 cm. Price $10.—.

The original edition of these tables was published in 1967 by the "Nauka i Tekhnika" Publishing House in Minsk.

Herein are tabulated the elements of four Gaussian quadrature formulas involving the respective weight functions $x^\alpha \ln(e/x)$, $x^\beta \ln(e/x) \ln[e/(1 - x)]$, $\ln(1/x)$, and $x^\beta e^{-x} \ln(1 + x^{-1})$. The range of integration for the first three is the interval (0, 1), while that for the fourth is $(0, \infty)$. The tabular points (nodes) and corresponding weight coefficients are uniformly presented to 15S in floating-point format, and the number of points extends from 1 to 10, inclusive. In Table 1 the exponent α assumes the values $-0.9(0.01)0(0.1)5$, while in Tables 2 and 4 the exponent β assumes the values 0(1)5.

Only the material in Table 3 appears to have been published elsewhere. An 8S table was given by Anderson [1] and an extensive 30S table appears in the book of Stroud & Secrest [2], which confirms the accuracy of Table 3.

Two examples of the application of Table 1 are presented, and interpolation with respect to α in that table is discussed in detail.

A bibliography of six items contains a reference to the paper of Anderson but not to the work of Stroud & Secrest, which presumably was not available to the authors.

J. W. W.

1. D. G. ANDERSON, "Gaussian quadrature formulae for $\int_0^1 - \ln x f(x)\, dx$," *Math. Comp.*, v. 19, 1965, pp. 477–481.
2. A. H. STROUD & DON SECREST, *Gaussian Quadrature Formulas*, Prentice-Hall, Englewood Cliffs, N.J., 1966. (See *Math. Comp.*, v. 21, 1967, pp. 125–126, RMT **14**.)

19[2.20].—B. DEJON & P. HENRICI, Editors, *Constructive Aspects of the Fundamental Theorem of Algebra*, John Wiley & Sons, New York, 1969, vii + 337 pp., 23 cm. Price $9.95.

These papers are the published proceedings of a symposium held on June 5–7, 1967, at the IBM Research Laboratory in Rüschlikon, Switzerland. The spectrum of ideas treated ranges from the presentation of an ALGOL algorithm for finding a real zero of a function $f(x)$ (that changes sign), to the specification of a mathematical algorithm for finding (to any given accuracy) all of the zeros of a polynomial with complex coefficients, to a discussion of iterative methods for numerically solving certain polynomial matrix equations, to a treatment of a logical constructive proof of the fundamental theorem for polynomials with algebraic coefficients. The state of the theory and the art in this fundamental field of logic and numerical analysis are well presented in the clearly written papers listed below:

DEJON, B., and NICKEL, K.: A Never Failing, Fast Convergent Root-Finding Algorithm; DEKKER, T. J.: Finding a Zero by Means of Successive Linear Interpolation; FORSYTHE, G. E.: Remarks on the Paper by Dekker; FORSYTHE, G. E.: What is a Satisfactory Quadratic Equation Solver?; FOX, L.: Mathematical and Physical Polynomials; GOODSTEIN, R. L.: A Constructive Form of the Second Gauss Proof of the Fundamental Theorem of Algebra; HENRICI, P., and GARGANTINI, L.: Uniformly Convergent Algorithms for the Simultaneous Approximation of all Zeros of a Polynomial; HERMES, H.: On the Notion of Constructivity; HOUSEHOLDER, A. S., and STEWART, G. W., III: Bigradients, Hankel Determinants, and the Padé Table; JENKINS, M.A., and TRAUB, J. E.: An Algorithm for an Automatic General Polynomial Solver; KUPKA, I.: Die numerische Bestimmung mehrfacher und nahe benachbarter Polynomnullstellen nach einem verbesserten Bernoulli-Verfahren; LEHMER, D. H.: Search Procedures for Polynomial Equation Solving; OSTROWSKI, A. M.: A Method for Automatic Solution of Algebraic Equations; PAVEL-PARVU, M., and KORGANOFF, A.: Iteration Functions for Solving Polynomial Matrix Equations; RUTISHAUSER, H.: Zur Problematik der Nullstellenbestimmung bei Polynomen; SCHRODER, J.: Factorization of Polynomials by Generalized Newton Procedures; SPECKER, E.: The Fundamental Theorem of Algebra in Recursive Analysis.

E. I.

20[3].—HAROLD W. KUHN, Editor, *Proceedings of the Princeton Symposium on Mathematical Programming*, Princeton Univ. Press, Princeton, New Jersey, 1970, vi + 620 pp., 24 cm. Price $12.50 (paperbound).

The field of mathematical programming has existed for less than 25 years. In that time, it has experienced phenomenal growth. The Princeton Symposium on Mathematical Programming, held at Princeton University on August 14–18, 1967, is one of a series of symposia held every three years since 1949. My major comment on these published Proceedings is that their value has been greatly diminished by the more than three years that it has taken to publish them. In fact, these Proceedings did not appear until after the 1970 Symposium had been held at the Hague.

From the more than 90 papers and addresses presented at the conference, 33 papers, in their entirety, and 48 abstracts are included in this volume. Of particular note are two bibliographies, one of 128 references on large-scale systems in the paper by Dantzig and one of 232 references on integer programming at the end of the first two papers by Balinski. These two papers form a very well written comprehensive