87. H. E. Salzer: *Table of coefficients for inverse interpolation with advancing differences.*

This table can be used in place of the similar one described in a previous abstract (49-9-224). In addition it has the advantage that it can be employed for inverse interpolation near the beginning or end of a table and also when only a few tabulated values are available (as is the case, for instance, when solving transcendental equations). The Mathematical Tables Project has computed the coefficients of the products of ratios of advancing differences of various order. These coefficients occur in the formula obtained by the inversion of the Gregory-Newton formula for direct interpolation, employing Lagrange's theorem. The polynomial expressions for those coefficients are given in H. T. Davis, *Tables of the higher mathematical functions*, vol. 1, pp. 80–81. (A slight addition to the formula was made to complete it as far as the eighth order.) The coefficients of the two fourth order and the two fifth order terms were calculated to ten decimals, at intervals of 0.001 of the argument $m=(u-u_0)/(u_1-u_0)$. The coefficients of the four sixth order terms were calculated at intervals of 0.01 and the four seventh order coefficients as well as the seven eighth order coefficients were computed at intervals of 0.1 (all to ten decimals). (Received December 2, 1943.)

88. Andrew Vazsonyi: *On two-dimensional rotational gasflows.*

The differential equation of an inviscous compressible fluid is determined under the condition that the conductivity of the gas is negligible. (By admitting discontinuities this includes flows with shock waves.) The equation of motion is (1) $\psi_{xx}(1-(u^2/a^2))-(2uv/a^2)\psi_{xy}+\psi_{yy}(1-(v^2/a^2))=\rho^2[\partial h_0/\partial\psi-((k-1)/kR)(h_0+q^2/2)\partial s/\partial\psi]$, $u=(1/\rho)\psi_y$, $v=-(1/\rho)\psi_x$, $\rho=e^{-s/R}(h_0-q^2/2)^{1/k-1}$, $q^2(h_0-q^2/2)^{2/k-1}=e^{2s/R}(\psi_x^2+\psi_y^2)$, $a^2=ke^{-(k-1)^{s/R}}\cdot(h_0-q^2/2)$ where the notations are as follows: ψ streamfunction, q velocity, u and v velocity components, ρ density, a local speed of sound, h_0 stagnation enthalpy (Bernoulli constant), s specific entropy, R gas constant, k isentropic exponent. There are two arbitrary functions in this equation, namely: $h_0(\psi)$ and $s(\psi)$; these must be given by the boundary conditions (or by the nature of the discontinuities). The flow is rotational in general and the rotation is given by $\omega=\partial v/\partial x-\partial u/\partial y=-\rho\partial h_0/\partial\psi+(p/R)\partial s/\partial\psi$. For irrotational flow the right-hand side of (1) equals 0. (Received January 28, 1944.)

Geometry

89. Stefan Bergman: *A Hermitian metric and its property.* Preliminary report.

Let the real analytic function $\Phi(z_1, z_2, \bar{z}_1, \bar{z}_2)$, $z_k=x_k+iy_k$, $\bar{z}_k=x_k-iy_k$, $k=1, 2$, of four real variables x_1, x_2, y_1, y_2, satisfy the equation $\Phi=c\{[\partial^2\Psi/\partial z_1\partial\bar{z}_1][\partial^2\Psi/\partial z_2\partial\bar{z}_2]-|\partial^2\Psi/\partial z_1\partial\bar{z}_2|^2\}$, $c=$constant, $\Psi\equiv\log\Phi$, in a domain B of the (four-dimensional) space and become infinite on the boundary of B. The expression $ds_B^2(z_1, z_2)=\sum_{m,n=1}^{2}[\partial^2\Psi/\partial z_m\partial\bar{z}_n]dz_m d\bar{z}_n$ defines in B a Hermitian metric which is invariant with respect to transformations by pairs of analytic functions, $z_k^*=z_k^*(z_1, z_2)$, $k=1, 2$, of two complex variables which are regular in B. Using the methods of the theory of orthogonal functions (see Bergman, *Sur les fonctions orthogonales de plusiers variables complex avec les applications à la théorie des fonctions analytiques*, Interscience Pub-