

introduced by Mersman (this Bulletin, vol. 44 (1938), pp. 667-673). It is shown that if  $\phi(u) \in BV[0, 1]$ , and  $g(x) = \int_0^1 d\phi(u)/(1+xu)$ , then the sequence  $\{g(n)\}$ , ( $n=0, 1, 2, \dots$ ), is a *C-Folge* in the sense of Hausdorff, and the Hausdorff mean  $[H, g(n)]$  is regular if and only if  $\phi(1) - \phi(0) = 1$ . If  $\phi(u)$  is real and monotone and  $\phi(1) - \phi(0) = 1$ , then  $H, g(n) \subset (C, 1)$ , and is equivalent to convergence if and only if the function  $g(x)$  is bounded away from zero in the half-plane  $R(x) > -\frac{1}{2}$ . Let  $\theta(u) = \sum_{p=1}^{\infty} q_p u^p$ ,  $q_p \geq 0$ ,  $\sum q_p < \infty$ . Then  $a_n = 1 + n \int_0^1 u^n d\theta(u)$ , ( $n=0, 1, 2, \dots$ ), defines a Hausdorff mean  $[H, a_n]$  equivalent to convergence if and only if  $\sum nq_n < \infty$ . (Received January 24, 1941.)

#### 145. J. A. Shohat: *On Bernoulli numbers and polynomials.*

Certain relations are established between Bernoulli polynomials  $B_n(x)$  and those of Legendre and symmetric polynomials of Jacobi; and a new proof is given of Jacobi's theorem concerning the expression of  $B_{2n}(x)$  in powers of  $x(1-x)$ . A reasoning of Mandl is utilized and made rigorous in order to obtain in a new way the well known remarkable relation between the Bernoulli number  $B_{2n}$  and the zeta-function  $\zeta(2n)$ . Applications are made to  $S_n(p) = 1^p + 2^p + \dots + (n-1)^p$ . (Received January 8, 1941.)

#### 146. S. E. Warschawski: *On conformal mapping of infinite strips.*

Let  $S$  denote the strip  $\phi_-(u) < v < \phi_+(u)$ ,  $-\infty < u < +\infty$  ( $\phi_+(u)$ ,  $\phi_-(u)$  continuous), in the  $w$ -plane,  $w = u + iv$ . Let  $z = Z(w)$  ( $\lim_{u \rightarrow +\infty} \Re Z(w) = +\infty$ ) map  $S$  conformally onto the strip  $|y| < \pi/2$  of the  $z$ -plane,  $z = x + iy$ . The principal object of this paper is to obtain asymptotic expressions for  $Z(w)$  and its derivative  $Z'(w)$  as  $u \rightarrow +\infty$ . For this purpose two inequalities are established, which are similar to those of L. Ahlfors (Acta Societatis Scientiarum Fennicae, new series A, vol. 1 (1930) p. 10 and p. 16), but which, due to some assumptions regarding the smoothness of the boundary of  $S$ , yield sharper estimates for large values of  $\Re w_1$  and  $\Re w_2$ . The asymptotic expressions for  $Z(w)$  and  $Z'(w)$  are then applied, after suitable transformations, to the study of the order of magnitude of the mapping function of a region  $R$  onto a circle in a neighborhood of a finite boundary point  $P$  of  $R$ . These applications include the cases where  $P$  is the vertex of a corner, or of a cusp, or is the asymptotic point of two "concurrent" spirals, and contain as special cases the results presented by the writer in two previous abstracts (42-5-219 and 42-11-409). (Received December 9, 1940.)

### APPLIED MATHEMATICS

#### 147. E. S. Allen and Harvey Diehl: *The enumeration of glycols.*

Recently the authors extended the method of Henze and Blair for enumerating certain organic compounds; in particular, the alcohols. This work is used as a basis for a recursive method of enumerating isomeric glycols, that is, compounds whose molecules have two oxygen atoms. The basic numbers which result are the number of structurally asymmetric glycols possessing  $n$  carbon atoms and having  $\alpha$  enantiomorphically distinct forms, and the number of structurally symmetric glycols possessing  $n$  carbon atoms and having  $\alpha$  distinct forms, of which  $\beta$  are completely symmetric. In all cases symmetry indicates identity of aspect of the molecule when viewed from the two hydroxyl radicals. (Received December 31, 1940.)