

## ABSTRACTS OF PAPERS

SUBMITTED FOR PRESENTATION TO THE SOCIETY

The following papers have been submitted to the Secretary and the Associate Secretaries of the Society for presentation at meetings of the Society. They are numbered serially throughout this volume. Cross-references to them in the reports of the meetings will give the number of this volume, the number of this issue, and the serial number of the abstract.

1. A. T. Craig: *On correlation due to common elements.*

In this paper linear functions of independently observed values of a chance variable  $x$  are considered when these functions have in common certain of the observed values. A necessary and sufficient condition that the functions shall have a linear regression system is derived. An investigation is also made of the regression system of real symmetric quadratic forms of normally and independently distributed variables. (Received November 19, 1937.)

2. H. L. Rietz: *On the correlation of a mean and standard deviation in small samples drawn from a certain non-normal population.*

The parent distributions with which this paper is concerned are given by urn schemata devised by the author some years ago to give meaning to measures of correlation in relation to certain given probabilities. The theoretical distributions resulting from the urn schemata were published in the *Annals of Mathematics*, vol. 21 (1920), pp. 306-322. In 1925, Leone E. Chesire prepared a master's thesis relating to small samples drawn from these non-normal distributions. Certain data that were obtained by the experimental sampling of Miss Chesire seem to be appropriate material for the study of the correlation of mean and standard deviation, and the corresponding regressions. The main object of the present paper is to report certain results of such a study. (Received November 5, 1937.)

3. F. D. Rigby: *Note on the axioms for Boolean algebras.*

Let  $E = [0, 1]$  and let  $f(x, y)$  be any one of the sixteen functions in  $EE$  to  $E$ . If the Sheffer stroke operation  $x/y$  is defined by  $f(x, y)$ , then the axioms of Boolean algebras hold in only two cases. A systematic study of the axioms which fail to hold is made with reference to their independence and interrelations. While the axioms of Sheffer can be proved completely independent by using algebras of two elements, this is not the case for the axioms of Huntington's fourth set. These can be shown to be completely independent by aid of algebras of three or more distinct elements. (Received November 10, 1937.)

4. C. E. Sealander: *A particular third order irregular boundary value problem.* Preliminary report.

The differential system  $u''' + p(x)u' + [\rho^3 + q(x)]u = 0$ ,  $u(0) = u'(0) = u(\pi) = 0$ , is considered,  $q(x)$  being a function with power series expansion in powers of  $x^3$  only, and  $p(x)$  being  $x$  times such a function. If  $u_n(x)$  denotes the solutions of the system, and if