a system consisting of $s \geq 1$ telephone channels; the author has considered some of these in a series of papers published in the Annales de l'Institut Henri Poincaré, and in the Comptes Rendus de l'Académie des Sciences over the past 16 years. His previous monograph (Mém. Sc. Math. Fasc. 136, Paris 1957) has been concerned with the particular case of $s=1$.

The problems which arise in the distributions of waiting times are reduced to the solution of a system of s simultaneous linear integral equations. These hold subject to the simple condition that the mean service time for a call is finite, the distribution function $f_2(t)$ of the intervals between consecutive calls being arbitrary. The integral equations are partially solved for any integer s when the service time distribution is negative exponential.

It is shown that they can also be solved for the two particular cases where 1) the Laplace-Stieltjes transform of the service time distribution is a rational function, $f_2(t)$ being arbitrary, and 2) the Laplace-Stieltjes transform for the distribution of intervals between calls is a rational function, the distribution function for service times being a step function. The method of solution is illustrated for $s=2$.

The reader concerned with developments in stochastic processes will find this monograph of great interest, the more so because of its original approach to the waiting time problems discussed.

J. Gani, Australian National University

Summation of Infinitesimal Quantities, by I. Natanson. Hindustan Publ. Co., Delhi 1961; published in America by Gordon and Breach, Science Publishers, New York 1962. 74 pages. $4.50.

This is a useful and well-written book intended for the pre-calculus student, and concerned with presenting and applying the fundamental idea of the integral calculus.

The author develops and uses the formulae

$$\text{(A)} \quad \sum_{k=1}^{n} k = \frac{n(n+1)}{2}, \quad \sum_{k=1}^{n} k^2 = \frac{n(n+1)(2n+1)}{6}, \quad \sum_{k=1}^{n} k^3 = \frac{n^2(n+1)^2}{4}$$

to establish a surprising variety of results usually obtained in elementary calculus. This is achieved using only the simplest idea of the limit process.

The technique is extended in two ways. First, by computing the volume of a cylindrical segment using two approaches, the author establishes that

$$\lim \left(\frac{1}{n^3} \sum_{k=1}^{n} k \sqrt{n^2 - k^2}\right) = \frac{1}{3}$$

and so is able to solve problems not falling within the scope of (A). Secondly, the author establishes the Principle of Cavalieri, and then uses this principle to solve problems such as computing the area of an ellipse and the volume of an ellipsoid.

The formula $\sum_{k=1}^{n} \sin k\alpha = \dfrac{\sin \frac{n\alpha}{2} \sin \frac{(n+1)\alpha}{2}}{\sin \frac{\alpha}{2}}$ is developed; and the result $\lim \left(\dfrac{\sin \alpha_n}{\alpha_n}\right) = 1$, where $\lim (\alpha_n) = 0$, is obtained by appeal to a diagram. On this basis, $\int_0^{\pi} \sin$ is computed.

An appealing feature of this short tract is the stress placed on the fundamental concept of integral calculus--"the notion of the limit of the sum of an indefinitely increasing number of limitlessly diminishing terms".

A. H. Lightstone, Carleton University, Ottawa

Electronic Digital Computers, by G. D. Smirnov (translated from the Russian by G. Segal). Pergamon Press, Oxford, 1961. 97 pages. 42 sh.

This little book is an attempt to briefly describe some of the elements of design and function of digital computers in the U. S. S. R. There is a great deal of interest in computers in the Soviet Union today and modern machines such as the B. E. S. M., Strela and Ural are already in operation. Photographs of these three machines are shown. Topics such as components, arithmetic units, storage units, etc. are briefly dealt with, but on the whole I do not consider the book impressive. This is mostly due to its brevity in style since many topics are considered, but none are savoured. In addition, the quality of the printing is poor.

G. G. Bach, McGill University