

stout championship of this system and firm rejection of the alternative idea of a Combined General Staff finds fresh support in the commentary included in the recent White Paper, which indicates that a close study of captured German archives demonstrates the inferiority of that system owing to the dangerous antagonisms caused by the cleavage between planning and execution nullifying any theoretical advantages of the German system. The remaining four essays briefly survey the study of disarmament, the problems of international forces, the Dominions and the War and the future of imperial defence.

Through these, as through the whole book, sounds a subdued note of hope that is most opportune in a world sadly perplexed by the wranglings in the United Nations Organisation and the Peace Conference. "If success should be slow in coming," writes Lord Hankey in his foreword, "if there are setbacks or even breakdowns, we must not be disheartened. We must remember that we are tackling problems that have baffled mankind throughout the ages. The perspective and vision of the historian are in these pages joined with the vision, judgment and administrative experience which Lord Hankey has for so long brought to the service of Britain.

R. BRIGHTMAN

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INFINITESIMAL CALCULUS

Vorlesungen über Differential- und Integralrechnung

Von Prof. A. Ostrowski. Band 1: Funktionen einer Variablen. (Lehrbücher und Monographien aus dem Gebiete der exakten Wissenschaften, 8.) Pp. xii+373. (Basel: Verlag Birkhäuser 1945.) 47.50 Swiss francs.

THE book is based on a series of lectures on infinitesimal calculus given regularly for more than seventeen years in the University of Basle. This, the first volume, contains a course intended for those whose main interest is in the applications of the calculus, and to this end it is freed as far as possible from what such students might reasonably regard as 'unnecessary subtleties'. Also the proofs of certain theorems, when too lengthy, are deferred to the second volume. Nevertheless, the course is full, clear, and sound in its foundations.

It is particularly interesting to find adopted the sequence which corresponds not only with the logical but also with the historical development, namely, the introduction of the definite integral in its own right before any mention of derivatives. Thus the following are evaluated directly from the definition of a definite integral.

$$\int_a^{\beta} (ax + b)dx, \quad \int_a^{\beta} \sin x dx, \quad \int_a^{\beta} x^n dx.$$

Clearly such a procedure focuses attention on the fundamental nature of the integral, and also makes a direct appeal to the student's appreciation of the problem to be solved.

There are also some interesting remarks on 'learning' and 'understanding'. The usually accepted object in learning mathematics is to understand. This last word has various meanings. One can be said to understand a mathematical rule: (1) when one can apply it; or (2) when one has tested every link in the chain of reasoning by which it is devised; or (3) when one can rediscover this chain of reasoning

unaided. The third sense is the one properly applicable in mathematics.

The contents of the book are as follows: (1) introductory; (2) limits; (3) continuous functions and definite integrals; (4) derivatives; (5) technique of differentiation; (6) technique of integration; (7) applications to mathematics.

The author claims to put clarity before elegance. To say that he has succeeded might convey a false impression. In fact, he has combined felicitously both qualities.

The printing is excellent and there are plenty of reasonably easy exercises.

L. M. MILNE-THOMSON

THE CALIFORNIA GROUND SQUIREL

The California Ground Squirrel

A Record of Observations made on the Hastings Natural History Reservation. By Jean M. Linsdale. Pp. xi+475. (Berkeley and Los Angeles, Calif.: University of California Press; London: Cambridge University Press, 1946.) 5 dollars.

THE Californian ground squirrel, *Citellus beecheyi* (Richardson) seems to have received more attention than any other wild animal in California, probably owing to the fact that cultivation is often followed by an enormous increase in its numbers. The observations recorded in the present work were made during the period October 1937-44, mainly on the Hastings Natural History Reservation, an area of grassland in Monterey County, California, ranging from about 1,500 to 2,750 ft. in height, and free from artificial disturbance. The author studied the habitat and general behaviour of this squirrel and devoted particular attention to the manner in which it adapts itself to changes in its environment.

The species seems to have deep permanent burrows, in which it is able to survive for several months under unfavourable conditions, but when the ground is brought under cultivation the squirrel rapidly spreads and occupies new areas. It is largely diurnal in its habits, but adults may spend as long as eight months dormant in their burrows each year. In some areas there is little indication of dormancy, but on the Reservation the season when it occurred ranged from June to March and included extremes of hot-dry and cold-wet conditions.

A special chapter is devoted to methods of communication—sounds, visual signals and scent—and to the receptive senses of these squirrels; also their mannerisms, activity and food are described in detail. This animal, like many other rodents, serves as a reservoir of the plague bacillus, but there is evidence in support of the view that latent infections do not last more than one or two months. The reproductive activities are found to be closely synchronized with seasonal changes in the climate, and only a few weeks each year are really suitable for regular activity above ground. During this period young ones appear at the surface.

The anatomy and general characters of the species are described in detail, special attention being given to the pelages and moults, as hitherto no adequate account of this has been available.

This monograph collects together a wide series of observations on very diverse aspects of the Californian ground squirrel, and the results will be