

a series of past observations. Ordinarily, a decrease in the spread of the error band can be attained only at a price. In practical work there is a limit in precision beyond which the precision gained is not worth the additional cost. Part of the statistician's job is to design sample surveys that produce the precision required for the purpose (formulation of action), but no more.

The simplest arrangement of the constant cause system is a smooth bowl in which have been placed physically similar discs on which numbers have been written. Samples drawn blindfolded therefrom with proper care in mixing and replacement will show variability that meets the criterion of statistical control. This variability can not be altered without the introduction of new numbers on the disks. Statistical control can be achieved in manufacturing and in sampling in the social science, though the emphasis must be on the word "achieve." Statistical control is not ordinarily found to exist naturally but requires effort, to which incidentally the work of Shewhart has been largely directed; his methods not only tell when control has been achieved but they help to achieve it.

The book under review can be said to bring the subject of statistical methodology to the reader as it was perfected up to the impact of Shewhart researches. The principles of the newer methods in statistics have appeared in at least one elementary text-book, namely, Colonel Leslie E. Simon's "An Engineers' Manual of Statistical Methods" (Wiley, 1941), and the principles are being put into sampling practise in both government and industry.

In the reviewer's opinion, the science of statistics will rise rapidly in the eyes of the natural scientists when in the future three conditions are met: (1) when it is recognized that the purpose of collecting, compiling and analyzing data is to provide a rational basis for formulating a course of action; (2) when the concept of the constant cause system and the usefulness of the statistical method in detecting assignable causes of variability is recognized; and (3) when the statistician is recognized as an expert in measuring and discovering assignable cause of variability, and in deciding how much precision (how big a sample) is economical.

The author of this book states in one of the prefaces directed to teachers that his product is a result of fifteen years of teaching, and that he has sifted the material very carefully. He states also that the business man and practising statistician will find the text valuable as a reference book. Certainly the author's claims in these respects are admirably fulfilled so far as the book goes. The summary formulas at the end of the book (pp. 624 ff.) are extremely handy for reference. The leading questions and references at

the end of each chapter will likewise draw appreciation from students, teachers and practising statisticians, as well as casual users. The practising statistician must be concerned not only with the science but the art of his subject, and the frequent suggestions for forms or work sheets and tables will be duly appreciated by many users.

What is needed in statistical theory and practice is some arrangement for interchange of talent between universities, government and industry. Some day, sometime, arrangements will be worked out whereby writers having the gift of presentation like Mr. Blair and the enthusiasm to write text-books, can have internships in government and industrial practise.

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FORESTRY

Forestry on Private Lands in the United States. By CLARENCE F. KORSTIAN, Duke University, School of Forestry, Bulletin 8, June, 1944; 234 pp. 27 figs. Price, paper \$1.00; cloth, \$1.50.

KORSTIAN'S study of the field of private forestry in the United States constitutes a sincere and impartial investigation of a subject on which little conclusive factual evidence of an authoritative character exists despite its importance in our economic future. Deep public concern has been manifested since the origin of the forestry movement in the '80s and '90s of the last century, over the progressive denudation of virgin forests, with little thought given to their renewal and perpetuation by private owners and operators. Although predictions of an impending timber famine, prevalent before World War I, have failed to materialize with the expected rapidity, due to the unexpected development of substantial quantities of second growth conifers in the vast southern pineries, yet the U. S. Forest Survey has lent no encouragement to the belief that scarcity of wood at an approaching future period will be avoided.

Consequently, public attention has again been focused on the problem of private forest lands, which comprise nearly 73 per cent. of all commercially productive lands, but which are being cut in the proportion of 95 per cent. of the total yield of saw-timber. Are private owners changing their attitude toward their forest holdings and managing them by methods which will insure the reproduction and maintenance of this resource, or is the process of exploitation, liquidation and denudation continuing? If it is, what should be done about it?

Dr. Korstian approaches this question in two ways. His primary purpose is to determine, by a process of sampling, the extent and character of private forest management based on individual initiative. His sec-

ond, is to explore public opinion in its reactions to the problem, and its cure.

For this purpose eight key states were studied. For the northeast, New York; for the Lake States, Michigan and Wisconsin; in the South, Virginia, Alabama and Arkansas; and for the Pacific Northwest, Oregon and Washington.

In his analysis of the physical situation, Korstian briefly describes the important forest types and their present condition, the forestry measures which have been attempted, with especial reference to silviculture, and finally, gives examples of owners and operators who have adopted and are practicing forest management with the object of sustained, perpetuated yield from their holdings. No attempt could be made to present statistical summaries which would show the extent or degree to which these practices had superseded liquidation or satisfied future requirements, on a national or regional scope. It does serve to reveal

a marked and extensive trend away from past shortsighted indifference, towards permanent private management of forests.

The results of Korstian's second line of investigation, into the state of public opinion, reveals a definite trend of support for the antidote of public regulation of private cutting. But equally prevalent was the sentiment that such measures if found necessary should be left in the hands of state authorities, rather than centralized at Washington, D. C. Due emphasis is placed on the need for adequate control of forest fires, and continuance of federal aid under the existing cooperative plan embodied in the Clarke McNary law. Emphasis is also placed on expansion of public educational programs, cooperative assistance to owners, and extension forestry, especially as applied to the farm woodlands which alone embrace almost exactly 30 per cent. of all commercial forest land.

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REPORTS

THE ARCHBOLD BIOLOGICAL STATION

It is announced by the Archbold Expeditions of the American Museum of Natural History that use of the facilities of the Florida station, previously reserved to staff members of the American Museum, will now be extended to a limited number of approved workers from other scientific institutions. The facilities will be available to workers in any field of biological research. A nominal charge to cover living and other expenses is contemplated, but the matter of cost relationships is left open for consideration in accordance with the requirements and circumstances of the studies of each individual.

The Archbold Biological Station is located at the southern end of the hill and lake region of peninsular Florida, about 25 miles south of Sebring and 32 miles west of Okeechobee. Established in 1941, it is maintained by Archbold Expeditions, an incorporated non-profit organization headed by Richard Archbold, research associate in the Department of Mammals at the American Museum. The establishment of the station was made possible through the generous gift by John A. Roebling of a thousand-acre estate, highly improved with service buildings, complete with working and maintenance plant and free of all encumbrance.

The original purpose of Archbold Expeditions was biological exploration in the Indo-Australian region, with emphasis on mammals, birds and plants. In the prosecution of this work, outstandingly successful expeditions were made to British New Guinea in 1933-1934 and 1936-1937, and to the Snow Mountains of Dutch New Guinea in 1938-1939. When in 1940 it

became apparent that, owing to disturbed political conditions in the Pacific, plans already maturing for another New Guinea expedition would have to be postponed indefinitely, attention was turned to related projects realizable in the United States. In the spring and early summer of that year, bird and mammal life history and behavior studies, and field experiments in color moving pictures and sound recording, were carried out in the southwestern deserts near Tucson, Arizona.

The Florida station was established to serve as a permanent home base for the expedition organization, and with the object of carrying out and aiding biological research in the United States. As opening projects, faunal surveys of the mammals and birds of the station and vicinity were made by A. L. Rand and Per Høst, members of the expedition staff. Rand also made studies in the life history and development of behavior of the burrowing owl, the Florida jay and other birds, in continuation of his well-known work in this field. Høst, now in war service, directed his attention to life history studies of the beach mouse and the spotted skunk, and research into the mechanism involved in color change in the plumage of birds, supplementing his field work with moving pictures of Florida wild life in color.

In 1943, various research projects were carried out at the station by staff members of the American Museum, working on a visiting fellowship basis. Included in these projects were life history studies of the round-tailed muskrat by John Eric Hill, collections of insects and spiders by Mont A. Cazier, life history studies of the Florida jay by Dean Amadon