in the mouth. The degree of abrasion, if any existed, was measured by determining the depth of any cuts or grooves found. A study was also made of the relationship between the condition of oral hygiene and the presence, or absence, of abrasion.

The results show that only a small percentage of teeth with 0.5 mm of exposure were abraded, whereas a very high percentage of those with 1.0 mm, or more, exposure showed some loss of the dentin. Therefore, it appears that 1.0 mm of exposure is critical in the sense that it permits considerable wear if the subject practices average oral hygiene. In the age groups 20–29, 30–39, 40–49, 50–59, critical exposures existed on one or more teeth in 58 per cent., 84 per cent., 96 per cent. and 94 per cent. of the subjects, respectively.

The incidence of some extent of abraded cementum and dentin increased with age from 42 per cent. to 76 per cent. The percentage of subjects showing wear greater than 0.5 mm deep increased from 4 per cent. in the age group 20–29 to 42 per cent. in the groups above 40 years of age.

An excellent correlation was found between the thoroughness of oral hygiene and the occurrence of abrasion. In those portions of the mouth where toothbrushing was most thorough, and among those people with the best oral hygiene, the incidence of abrasion was the highest and on the other hand, where poor oral hygiene was observed very little abrasion was noted.

The influence of age and oral hygiene on exposure and abrasion of cementum and dentin has been briefly summarized here. It is planned to present this data in detail at a later date along with a discussion of the effect of sex and the position of the tooth in the mouth on exposure and abrasion.

PAUL C. KITCHIN

OHIO STATE UNIVERSITY

THE EFFECT OF CHLOROFORM ON SOME INSECT BITES

DUE, in part at least, to economic factors the control of mosquitoes and biting insects is not always feasible or practical. Nevertheless, this state of affairs affords little consolation to the susceptible individual who must live and work where these pests abound.

In 1924 the writer noticed that cotton saturated with carbon tetrachloride rubbed briskly on mosquito bites caused a rapid cessation of pruritis. Later chloroform was substituted, and found superior. Since then similar trials have been made on a number of individuals, including several physicians. It was felt that the testimony of the latter would add some degree of validity to these rough tests.

The arthropods concerned in these tests were the local red bug, *Trombicula sp.,* the mosquitoes *Culex fatigans* and *Aedes aegypti,* the prevalent black fly, *Simulium quadrivittatum,* and the gnat, *Culicoides furens,* a most annoying species common along the coastal plain of the island.

In all instances the results confirmed initial observations. Usually a more beneficial effect was experienced if treatment were not too long delayed. Nevertheless, a physician whose entire body surface was covered with mosquito bites after a trip to an adjacent island, condescended to try chloroform on a limited area approximately 48 hours after incurring the bites. The relief was so marked that he soon applied the drug on a considerably larger scale.

The dermatologist may present objections to the use of chloroform as a counter-irritant. Of course this substance must be kept from the eyes and mucous membranes. In all tests made no effect other than a transient burning sensation was noted. In one instance a woman long affected with angioneurotic edema, and very susceptible to mosquito toxin, used chloroform to obtain relief over a period of several months. The objective was attained without causing any noticeable change in the edematous condition.

The tests indicated here are obviously not critical ones. It is believed, however, that sufficient evidence has been accumulated to justify calling attention to the palliative potentialities of chloroform against the toxins injected by mosquitoes and other noxious arthropods. It deserves a trial for flea bites and schistosome dermatitis, provided of course, the areas involved in the case of the latter are not too extensive.

W. A. HOFFMAN

SCHOOL OF TROPICAL MEDICINE,
SAN JUAN, PUERTO RICO

PRESERVATION OF SAMPLE AREAS IN THE NATIONAL FORESTS

I WOULD like to make a brief reply to Dr. Henry I. Baldwin's communication in SCIENCE for June 27, 1941, in which he condemns my criticism in a communication in SCIENCE for May 2, 1941, of the failure of the U. S. Forest Service to preserve in the National Forests sample areas exhibiting the finest development of the different types of our primeval forests.

Dr. Baldwin asserts that reservations of "really valuable timber" (whatever that may mean) "have been made by the Forest Service in a large number of cases."

Now what the Forest Service has done and is doing is not a matter of argument but of fact and of record. Either such reservations in the National Forests exist or they do not. If they do, do they contain optimum or near-optimum stands of the wonderful forests of the western United States;—forests unequaled anywhere else in the world, whose unique scenic magnificence as well as scientific interest demanded that adequate areas of the finest stands should be preserved?

Do any permanent reservations of that bureau contain stands of Douglas fir in which the mature trees average 275 feet or more in height; Sitka spruces, western hemlocks, lowland white firs, western white pines or western red cedars 225 feet tall; Port Orford cedars, Ponderosa pines, western larches or Noble firs 180 feet tall or more, to name a few of the species? Hundreds of square miles of stands of timber of such sizes have been sold out of the National Forests.

While the Forest Service has made vast "reservations" of unimportant and commercially valueless areas, a great deal of traveling in the forest regions of the west during past years and recently a number of letters of inquiry have failed to bring out from the Forest Service any evidence that it is doing much of anything in the preservation of any fine samples of the forests of our western states, though, of all the government bureaus, it alone had the opportunity to accomplish it and was under the deepest obligations to the nation to do so.

The big timber in the National Forests is mostly gone. Only in certain of the National Parks will the Americans of the future be able to see a few small remnants of the wonderful forests of the western United States in their best development.

WILLARD G. VAN NAME
AMERICAN MUSEUM OF NATURAL HISTORY

SCIENTIFIC BOOKS

ADVANCES IN ENZYMOLOGY

Advances in Enzymology and Related Subjects. Edited by F. F. NORD and C. H. WERKMAN. Vol. I. 433 pp. + 56 illustrations. New York: Interscience Publishers, Inc. $5.50. 1941.

THE present volume consists of a collection of ten independent articles contributed by investigators from various countries (7 from the United States and one each from Germany, U. S. S. R. and Holland). As stated in the preface, this series of monographs is initiated at a time when research and original thinking are subjected to the gravest of interruptions; it may be difficult to maintain international collaboration in future volumes. According to a letter received by Dr. F. F. Nord, who served as editor of both publications, the aims and scope of the "Advances in Enzymology" are similar to those of the now defunct "Ergebnisse der Enzymforschung."

The ever widening field of enzyme research and the scattering of publications over a large number of scientific periodicals makes it desirable to present from time to time summarizing articles of timely topics by authors eminent in the field. The authors are encouraged to present their own view-point and experimental results and to treat their subject in a critical and synthetic manner rather than in the form of a mere compilation of the literature. In the opinion of the reviewer, the editors, both of whom are well-known investigators in the field of enzyme research, have succeeded in combining in the present volume a number of extremely interesting and valuable articles. While it is impossible to consider in detail each article, a few remarks concerning some of them will be made.

Protein structure is reviewed by Bull. The peptide linkage is considered to be the only important co-valent bond between amino acid residues in proteins. In this connection the theory of peptide chain folding of Wrinch which postulates another type of co-valent bond is examined in some detail. The x-ray diffraction pictures of fiber proteins and their bearing on the structure of these fibers, particularly that of α- and β-keratin, are discussed. Bull regards Svedberg's idea of molecular weight classes of proteins (whole number multiples of the unit molecular weight of 17 600) as unfounded. The Bergmann theory of protein structure is based on the concept of molecular weight classes and of a regular and invariant periodicity of occurrence of amino acids in a single peptide chain; the molecular weight is obtained by multiplying the total number of amino acid residues by the average residue weight. Bull points out that the calculation of the average residue weight is uncertain, because the analytical results for individual amino acids in most proteins are not sufficiently accurate at the present time. Other problems discussed are those of the shape of globular proteins, hydration and denaturation.

The article of Bergmann and Fruton is a valuable review of their work on the specificity of proteinases. A good deal of exact information is now available, due mainly to the use of synthetic substrates of known structure and of crystalline enzymes. Pepsin, trypsin and chymotrypsin are regarded as the best defined proteinases. The typical substrates for pepsin and chymotrypsin contain tyrosine or phenylalanine residues; the former enzyme acts at the peptide linkage that involves the amino group of these amino acids, while the latter enzyme acts at the peptide linkages involving the carboxyl group of these amino acids. Trypsin acts at the carboxyl end of lysine or arginine residues. Enzymatic synthesis of single peptide linkages has been effected with a number of proteinases.

In Lipmann's article on phosphate bond energy, the central theme is that there are two groups of organic phosphate compounds found in nature, a large group with relatively low potential energy in the phosphate bond and a smaller group which con-