THIS monumental work is an invaluable addition to our knowledge of those Stone Age forms of man that immediately preceded our own species upon the Old World time scale. The book deals with the human remains recovered from caves on the slopes of Mount Carmel in Palestine. It is confined, however, to those specimens recovered from cultural levels indicated as Levalloiso-Mousterian, and approximating in date the Riss-Wurm interglacial. The post-Pleistocene Natufian skeletal material is reserved for a later monograph. The present work is entirely osteological in nature, the cultural material and associated fauna having been described in Volume I of this series, published in 1937 and authored by Dorothy Garrod and Dorothea Bate. The two volumes together constitute the final report of the expeditions to Palestine supported by the American School of Prehistoric Research, the British School of Archaeology, in Jerusalem, and the Royal College of Surgeons through the years 1929 to 1934.

Because of lay interest in the spectacular *Sinanthropus* finds near Peking, the Skhūl and Tabūn peoples have tended to escape notice. Actually the latter propound new problems to the student of human evolution, as well as carry back into pre-Wurmian time the dating for a human type approaching *sapiens* in several diagnostic particulars. The finds were unusual, not alone in the amazing degree of individual variation represented, but in the presence of delicate skeletal parts such as the bones of the hands and feet, which provided an exceptional opportunity for extended anatomical analysis not usually afforded the student of Pleistocene man. Two human types were found: the Skhūl people, represented by several individuals of both sexes, and—from another cave—two Neandertaloid specimens referred to as "Tabūn." The Tabūn individuals are clearly assignable to *neandertalensis,* and may be assumed to be roughly contemporaneous, geologically and culturally, with the Skhūl remains, or, at best, slightly earlier.

The Skhūl people, on the other hand, present problems to specific classification. They are characterized by a variable mixture of both paleoanthropic and neanthropic characteristics which reveal possible affinities with the Cro-Magnon stock and also with the Neandertal strain—a people, in short, somewhat intermediate in character between the two. The brain is well up in the modern range and essentially *sapiens* in type; adaptation to bipedal locomotion is perfect. After some hesitation and weighing of characters, however, the authors assign the Skhūl people to those forms of humanity showing a dominance of Neandertaloid traits. Hybridism as the result of contact between an early *sapiens* type and *neandertalensis* can not be ignored as a possible explanation of this mosaic of advanced and primitive features, although it is not the explanation favored by the authors. They incline to the view that "the abundance of neanthropic characters in Mount Carmel man is an indication . . . that he broke away from the stem of mankind emerging in western Asia during early Pleistocene times, at a date later than did the ancestral stock of the Neandertals of western Europe. Being later in his separation, Mount Carmel man has thereby come to have a larger degree of Neanthropic characters of the stock which ultimately produced the Cro-Magnon. . . ."

This interpretation projects our search for the earliest *Homo sapiens* farther into the East, and introduces a view which the authors foresee may prove unacceptable to Dr. Hrdlička. The latter would, in all probability, view the Skhūl intermediates as simple evidence of the active evolution of the Palestinian Neandertals into the *sapiens* type. The authors of the present volume, however, are good-naturedly tolerant of interpretations other than their own, and lay no claim to infallibility. They have succeeded in producing a work which, in outlook and erudition, marks another milestone in our search for human origins.

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SOKOLNIKOFF'S ADVANCED CALCULUS

Advanced Calculus. By I. S. SOKOLNIKOFF. 446 pp. New York: McGraw-Hill Book Company. 1939.

THIS text is designed to follow one year's work in the calculus. In marked contrast to the familiar pattern of drill in technique and of numerous interesting applications to geometry and physics, this course provides special emphasis upon rigorous concepts of real variable analysis. In a well-coordinated, self-contained development the student is encouraged to acquire a critical attitude with regard to the existence of derivatives and integrals and the legitimacy of elementary operations in the calculus. The problem material is particularly well chosen to hint the wealth of possible later analytic developments. Much of what is often left to a graduate course is here made available in a substantial but not excessive program for one year's undergraduate work. Included are chapters devoted, respectively, to line integrals, applications of power series, Fourier series and implicit functions. The instructor must decide whether this solid unspiced fare, so well-prepared (patterned after selections from Goursat, Knopp and de la Vallée-Poussin), seems the best for the fleeting undergraduate semesters. In laying a solid foundation for the future analyst, the book affords little comfort to the technical problem-solver. This "advanced calculus" must in any case be followed

by a "higher course" if the calculus is to prove an effective working tool in the handling of problems originating outside of mathematics, since along with much else even the subject of differential equations has been postponed beyond this text.

BROWN UNIVERSITY ALBERT A. BENNETT

SOCIETIES AND MEETINGS

SPECIAL RESEARCH CONFERENCES ON CHEMISTRY

THE third series of conferences on chemistry, under the auspices of the Section on Chemistry of the American Association for the Advancement of Science, will be held at Gibson Island, Md., from June 17 to August 2. It will consist of six groups of papers and discussions in important fields of chemistry. Each of the six groups will occupy a period of five days, in each of which only one or a few formal papers will be presented, leaving ample time for discussions. In the following outline the paper or papers in each group, will be presented on successive days.

I. *Frontiers in Petroleum Chemistry.* June 17–21. C. R. Wagner, *chairman.* Program: Frederick D. Rossini, "The Analysis of Petroleum as Exemplified by Project No. 6 at the Bureau of Standards"; Gustav Egloff, "The Production of Aromatic Hydrocarbons from Petroleum"; E. V. Murphree, "Alkylation"; C. W. Montgomery, "Isomerization"; L. L. Davis, "Oxidation of Lubricating Fractions"; J. A. Boyd, "Investigations of the Combustion of Characteristics of Pure Hydrocarbons."

II. *Catalysis.* June 24–28. E. C. Williams, *chairman.* Program: Otto Beeck, "Modern Physical Methods in the Study of Catalysis"; R. B. Burk, "Theories of Polymerization and their Consequences"; P. H. Emmett, "Surface Area Measurements in Studying Catalytic Reactions"; Kenneth Blanchard, "Fermentation"; H. S. Taylor, "The Definition of Absorption and Surface Characteristics of Catalysis."

III. *Organic High Molecular Weight Type Compounds.* July 8–12. H. L. Bender, *chairman.* Program Committee: R. H. Kienle, S. S. Kistler and H. L. Bender. Program: E. O. Kraemer, "The Molecular Basis of Resin Behavior"; Emil Ott and H. M. Sprulin will conduct a discussion of high molecular weight compounds; H. Mark, "The Elastic Behavior of High Molecular Compounds"; W. T. Busse, "The Effect of Temperature and Hysteresis on the Tensile Properties of Rubber in Shear"; B. S. Garvey, Jr., "Mixed Polymers and Vulcanizable Plasticizers"; R. M. Fuoss, "Electrical Properties of Polyvinyl Chloride Plastics"; H. Hetenyi, "Photoelastic Tests with Heat Hardening Resins at Elevated Temperatures"; W. Sisson, "X-Ray Studies Regarding the Structure and Behavior of Cellulose Fibers"; Henry Eyring, "Rate Processes Involving Large Molecules."

IV. *Vitamins.* July 15–19. C. G. King, *chairman.* Program Committee: J. W. M. Bunker, A. D. Emmett and C. G. King. Program: H. C. Sherman, "Vitamin A Values: Determination by Bioassay and Interpretation in the Light of Natural Variations"; A. D. Holmes, leader of discussion; Harden F. Taylor, "Physico-chemical Methods of Vitamin A Assay"; Norris Embree, leader of discussion; E. M. Nelson, "The Development of Enforcement Policies Relative to Assays and Analyses"; H. T. Scott, "Problems and Possible Improvements in Vitamin D Bioassays"; N. A. Milas, "Physico-chemical Methods of Vitamin D Assay"; Walter C. Rissell, leader of discussion; S. B. Binkley and E. A. Doisy, "The Chemistry of Vitamin K"; S. Ansbacher, "The Bioassay of Vitamin K"; O. A. Bessey, "The Techniques of Analysis and Assay of Vitamin C"; C. J. Farmer, "Vitamin C Analyses in Relation to Clinical Problems"; D. K. Tressler, "Vitamin C Values in Fruits and Vegetables"; O. L. Kline, "Bioassays for Factors in the Vitamin B-Complex with Special Reference to Vitamin B_1"; C. N. Frey, A. S. Schultz and L. Atkin, "The Fermentation Method for the Determination of Thiamine"; C. H. Hunt, "The Anti-gray Hair Factor"; W. L. Sampson, "The Chemistry and Pharmacology of Vitamin B_6"; G. C. Supplee, "Bioassays and Chemical Tests for Riboflavin"; W. H. Sebrell, Jr., "Bioassay for Factors in the Vitamin B-Complex, with Special Reference to Nicotinic Acid"; Paul György, "Skin and Vitamins, with Particular Reference to the Vitamin B-Complex"; C. D. May, "Clinical Studies of Vitamin A Deficiency"; E. A. Sharp, "Anemias Associated with Vitamin Deficiencies"; Tom D. Spies, "Multiple Deficiencies Associated with Pellagra"; H. R. Butt, "Clinical Studies of Vitamin K Deficiency"; G. Dalldorf, "Clinical Studies of Vitamin C Deficiency."

V. *Relation of Structure to Physiological Action.* July 22–26. Walter Hartung, *chairman.* Program Committee: D. L. Tabern and Walter Hartung. Program: C. M. Suter, "The Syntheses and Bactericidal Properties of Phenolic Compounds"; R. S. Shelton, "Correlations of Chemical Structure and Germicidal Activity Among Some Quaternary Ammonium Salts"; Warner Carlson, "Cinchona Alkaloids: (I) "A Survey of the Relation of Structure to Anti-Malarial Action," (II) "Certain Biological Aspects of Anti-Pneumococcal Action"; Alice Renfrew, "Structure of Anti-Pneumococcic Activity and the Cinchona Series"; F. F. Blicke, "Chemistry of Antispasmodics"; C. W. Geiter, "Pharmacology and Evaluation of Antispasmodics"; A visit to the Baltimore hospitals; D. L. Tabern, "Intravenous Anesthesia"; Oskar Baudisch, "Biological Orientation in Minor Element Research: Formation, Reactivity and Structure of Chemical Groupings which Capture and Concentrate Elements Selectively."

VI. *Applications of X-Ray and Electron Diffraction.* July 29–August 29. Maurice L. Huggins, *chairman.* Program: J. L. Hoard, "X-Ray Studies of Complex Inorganic Compounds"; H. Mark, "X-Ray Studies of Long-Chain Compounds"; I. Fankuchen, "X-Ray Studies of Proteins"; D. M. Wrinch, "The Interpretation of X-Ray Data on Proteins"; Wm. L. Fink and D. W. Smith, "Preferred Orientations in Metals"; Charles S. Barrett, "X-Ray Diffraction from Strained Metals and Alloys";