Similarly, Dr. Lowie in his comparative study of the Age Societies—religious bodies grouped or graded according to the age of their members—although dealing with a set of institutions much older than the Iruska ceremonies, in fact far antedating the advent of the Caucasian in the region, establishes that the age-grade societies are an outgrowth of a system of non-graded societies still prevailing among the majority of Plains tribes; that the grading originated among either the Mandan or Hidatsa; and that the scheme spread from them respectively to the Arapaho and Gros Ventre and to the Blackfoot at a time when these peoples were in closer contact with the Mandan-Hidatsa than has been the case within the historic period. Again, the outcome of the investigation is a specifically founded reconstruction and a definite tracing of the sequence of events.

Dr. Lowie concludes by testing against these positive determinations a theory devised according to the old method by Schurtz, purporting to discern age societies as an institution arising spontaneously and necessarily at a certain stage of development of human civilization. As a wholly abstract speculation, the Schurtz hypothesis is scarcely assailable and equally useless. Matched against the analyzed facts in the Plains of North America, in Melanesia, and in East Africa, it breaks down and dissolves utterly. In fact Dr. Lowie shows convincingly that the age societies in these regions are not identical nor even parallel but represent diverse causes, diverse characters, and diverse sequences. Their uniformity and the supposed "laws" governing them are in the assumptions of the theorizer, not in the events.

This, it may be added, is the type of finding that invariably emerges when a critical and inductive examination is made of any of the smooth explanations that were the crop of the anthropology of half a century ago, and which are still the inviolable stock in trade of the anthropology dealt out in the Sunday newspapers, the drawing room, the books on "social evolution" and the mass of semi-scientific, unscientific, and pseudo-scientific literature that sets solution before inquiry. The matriarchate, the priority of female lineage, the antecedence of the clan to the family, promiscuity and group marriage, the fundamentality of the totem idea, the mana concept as the basis of religion, the development of alphabets from pictures, of geometric ornament from symbols, strange vestigial survivals generally—all these delightfully exotic, fascinatingly romantic, and often alluringly shocking views that have given anthropology most of its broad appeal, have their glitter crumble into dust as soon as critical method is applied to them. To most ethnologists of his own school, Dr. Lowie's elaborate demolition of the Schurtz speculation may seem unnecessary. Its wider significance is as a symptom of the growing conversion of anthropology from the toy of fanciful half scholarship to a product of scientific method.

Finally, too great credit can hardly be bestowed on the institutional side upon the American Museum of Natural History, its anthropological department, and Dr. Wissler, for the clean, business-like, and effective manner in which the undertaking represented in this volume was planned, carried through, and concluded. Without announcement or formal flourish an important scheme was formulated, put into operation year after year, systematically but never unbendingly adhered to, with cumulative results, and concretely accomplished through the cooperating efforts of a staff of five participating students, one of them a member of the native race whose institutions formed the subject of the inquiry. The parts of the volume were published promptly, the summaries undelayed, the typography, illustrations, and index are of the best. The record is one with which the Museum may well be content administratively as well as scientifically.

A. L. Kroeber

THE PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

The eleventh number of Volume 3 of the *Proceedings of the National Academy of Sciences* contains the following articles:

A necessary and sufficient Condition for the Existence of a Stieltjes integral: GILBERT AMES BLISS, Department of Mathematics, University of Chicago.

Transformations of Applicable Conjugate Nets of Curves on Surfaces: Luther Pfahler Eisenhart, Department of Mathematics, Princeton University.

On Bilinear and N-Linear Functionals: Charles Albert Fischer, Department of Mathematics, Columbia University.

The Crystal Structure of Chalcopyrite Determined by X Rays: Charles L. Burdick and James H. Ellis, Chemical Laboratories, Throop College of Technology. Chalcopyrite belongs to the tetragonal system of crystals, few of which have been examined for structure. The lattice is of the face-centered type.

The Isostatic Subsidence of Volcanic Islands: W. M. Davis, Department of Geology and Geography, Harvard University. Darwin's primary theory of coral reefs holds good, although his supplementary theory of broad ocean-floor subsidence needs modification.

On the Deformation of an N-Cell: Oswald Veblen, Department of Mathematics, Princeton University.

A Theorem on Series of Orthogonal Functions with an Application to Sturm-Liouville Series: George D. Birkhoff, Department of Mathematics, Harvard University.

Low-Temperature Formation of Alkaline Feldspars in Limestone: Reginald A. Daly, Department of Geology and Geography, Harvard University. A review of recent European literature and a discussion of American Rocky Mountain dolomite.

The Interferometry of Small Angles, etc. Methods by Direct and Reversed Superposed Spectra: Carl Barus, Department of Physics, Brown University.

The twelfth number of Volume 3 contains the following articles:

Incompatibility of Mutant Races in Drosophila: C. W. Metz and C. B. Bridges, Carnegie Station for Experimental Evolution, and Columbia University. The evidence from two cases of incompatibility in laboratory cultures taken with evidence from apparently mutant forms and incompatible varieties of nature tends to remove a serious objection to the mutation hypothesis and emphasizes the possible evolutionary importance of mutations involving incompatibility.

Absorption Effects in the Spiral Nebulæ: Heber D. Curtis, Lick Observatory, University of California. Negatives of spiral nebulæ obtained with the Crossley Reflector show that the phenomenon of dark lanes caused by occulting or absorbing matter is much more frequent than has been supposed. The results may bear directly on the explanation of the peculiar grouping of the spirals.

The Synergetic Action of Electrolytes: Oran L. Raber, Laboratory of Plant Physiology, Harvard University. Synergy is the opposite of antagonism; although antagonism is frequently reported, few cases of synergy have been noted.

Appetites and Aversions as Constituents of Instincts: Wallace Craig, University of Maine, Orono. Although innate chain reflexes constitute a considerable part of the equipment of doves, few or none of their instincts are mere chain reflexes. On the contrary each instinct involves an element of appetite, or of aversion, or both.

Rapid Respiration after Death: A. R. C. Haas, Laboratory of Plant Phsiology, Harvard University. The respiration of *Laminaria* may be much greater after death than in the normal condition.

The Means of Locomotion in Planarians: Caroline E. Stringer, Zoological Laboratory, Radcliffe College. The locomotion is essentially a muscular act in which the cilia play no necessary part.

Diurnal Changes in the Sea at Tortugas, Florida: J. F. McClendon, Department of Physiology, University of Minnesota and Tortugas Laboratory, Carnegie Institution of Washington.

Note on Interferometer Methods of Measuring the Elastics of Small Bodies: Carl Barus, Department of Physics, Brown University.

Sublacustrine Glacial Erosion in Montana: W. M. Davis, Department of Geology and Geography, Harvard University. Clark fork branch-glacier seems to have done its visible erosive work on the valley-side spurs—and presumably a considerable amount of invisible work on the valley bottom—although it must have been wholly submerged in Lake Missoula for two or three score, if not for four score miles.

The Effect of Stretching on the Rate of Conduction in the Neuro-Muscular Network in Cassiopea: J. F.McClendon, Department of Physiology, University of Minnesota and Tortugas Laboratory, Carnegie Institution of Washington. Apparently stretching the nerve does not change the rate.

A Criticism of the Evidence for the Mutation Theory of De Vries from the Behavior of Species of Oenothera in Crosses and in Selfed Lines: Bradley Moore Davis, Department of Botany, University of Pennsylvania. Although most of the genetical work on œnotheras has not been interpreted in Mendelian notation, there is clear evidence of order in the results in inbreeding and crossing: the difficulty has been to discover and to isolate simple material in the confusion of mixed and impure forms of these plants.

The Spectra of Isotopes and the Vibration of Electrons in the Atom: William D. Harkins and Lester Aronberg, Kent Chemical Laboratory and Ryerson Physical Laboratory, University of Chicago. The spectra of isotopes have previously been reported as identical within the errors of measure. The authors find, however, a slight difference. The wavelength of uranio-lead was very slightly longer than that of the ordinary lead.

The Effect of Oxygen Tension on the Metabolism of Cassiopea: J. F. McClendon, Department of Physiology, University of Minnesota and Tortugas Laboratory, Carnegie Institution of Washington.

National Research Council: Scientific Publications from Germany; Report of the Geology and Paleontology Committee; First Report of Committee on Zoology; The Scope and Work of the Botanical Raw Products Committee; Meetings of the Executive Committee.

List of Publications of the National Academy of Sciences.

Report of the Autumn Meeting: Business Session; Scientific Sessions.

We may summarize the articles in Volume 3 of the *Proceedings* as follows: Mathematics, 13; Astronomy, 17; Physics and Engineering, 32; Chemistry, 12; Agriculture, 4; Geology and Paleontology, including Oceanography, Mineralogy and Petrology, 18; Botany, 5 (see also Genetics); Zoology, including General Biology, 27 (see also Genetics); Genetics, 11; Physiology and Pathology, 18; Anthropology and Psychology, 5; a total of 162 articles.

The division of these articles between members of the academy and non-members is 49 and 113 respectively.

The list of institutions which have contributed three or more articles is as follows: Carnegie Institution, 32, divided as follows: Solar Observatory 13, Marine Biology 7, Station for Experimental Evolution 6, Tortugas Laboratory 5, Geophysical Laboratory 1; Harvard University 26; Brown University 9; Yale University 7; University of Chicago 6; University of Illinois 5; Princeton University 5; Rockefeller Institute for Medical Research 4; U. S. Department of Agriculture 4; Johns Hopkins University 4; University of Virginia 4; General Electric Company 4; American Museum of Natural History 3; Columbia University 3.

EDWIN BIDWELL WILSON
MASS. INSTITUTE OF TECHNOLOGY,
CAMBRIDGE, MASS.

SPECIAL ARTICLES

RESULTS OF CORN DISEASE INVESTIGATIONS

A PRELIMINARY summary of three years' investigations of certain little understood corn diseases made in Illinois and Indiana, includes some interesting facts which the writers desire to present at this time. This study has been conducted both in the field and in the laboratory. A more complete statement of the results will be published in the near future.