

RESEARCH ITEMS

Pomo Ethnogeography

OMER C. STEWART (*Univ. California Pub. Amer. Arch. and Eth.*, 40, 2; 1943) has made an intensive survey carried out on the spot, with painstaking exactitude, of the Pomo, the best-known of the Indian tribes of California. There are three principal environmental divisions of these folk, but the linguistic divisions are numerous; each of these subdivisions is described and points of interest noted. One striking feature is the way in which the linguistic areas strike across the geographical ones, so that each unit has its fair share of valley, stream and hill. Moreover, members of a community are not limited to their own ground but are allowed, by permission, to visit, say, the coastal areas to collect food there, so that all Pomo have access to the products of the entire area. Although the larger tribe could dominate the smaller ones, they do not appear to do so, but allow the minorities to possess territories providing an adequate food supply.

Archæology of South Park, Colorado

PROF. E. B. RENAUD has brought out a fifth paper in an archæological series which is being issued in typescript by the Department of Anthropology in the University of Denver. The publication under notice deals with certain archæological finds made in a mountainous district to the south-west of Denver. The most common type of site is an encampment with, frequently, an adjacent workshop. Stone implements and pottery occur, and naturally several ages are represented. Folsom and Yuma points have been recognized, so fairly early phases of the Stone Age do occur.

Washo-Northern Paiute Peyotism

THE religious cult of peyotism is widespread among the Indians of the United States and Mexico, where it was found by early Spanish explorers so early as 1560. The peyote is a small spineless cactus which when dried is easily transported and hence available beyond the area in which it grows. Eating the peyote produces slight intoxication combined with sensory hallucinations, and was supposed to be curative. Many records exist of these cults, which show a sufficient uniformity to allow of a general description: the purpose was to heal and protect, through the worship of God by means of peyote. This cult was first introduced to the Washo and Northern Paiute Indians in 1936 and has therefore been well documented. Omer C. Stewart (*Univ. California Pub. Amer. Arch. and Eth.*, 40, 3; 1944) was in the field only two years after its first appearance, and was therefore able to get first-hand information from most of the original participants, while the experience was still fresh in their minds and modifications had not set in. The results of this investigation set down here are all well documented and finally tabulated. There seems little evidence of cures, though occasionally these occur, and the conclusion reached is that the majority of Indians have not yet found this cult the answer to their spiritual and physical needs.

Control of the Potato Moth

SEVERE losses are sustained on the mainland of Australia by attack of the potato moth, *Gnorimoschisma operculella*. The pest is particularly numerous in dry seasons, and has proved difficult of control. G. A. H. Helson, however, has found that a phenothiaz-

ine spray of 3 lb. of the compound in 100 gallons of water has proved satisfactory (*J. Coun. Sci. and Ind. Res.*, 17, 3; August 1944). Five sprayings were given, and the treatment doubled the crop. The economics of control are not, however, fully established. Lead arsenate with sodium aluminium sulphate, and synthetic cryolite, gave partial control, and basic copper arsenate was of very little effect.

South African Species of *Encephalartos*

THE taxonomy of the larger genera of cycads has long been in an unsatisfactory state. Their large leaves and often bulky cones do not lend themselves readily to ordinary herbarium methods of preservation, and inadequate material in the hands of systematists unfamiliar with the living plant is responsible for the incomplete knowledge of the species and the extent to which they vary. Study of the extensive living collection of *Encephalartos* in the National Botanic Gardens, Kirstenbosch, has provided M. R. Henderson (*J. South African Bot.*, 11, Pt. 1, Jan. 1945) with materials for a revision of the South African species of this genus of cycads. A number of species are known at present only from one or two plants, with cones of only one sex, or none, and much field work remains to be done before the variability and distribution of some even of the better known species are thoroughly understood. In this preliminary account twenty-two species, six of which are new, are recognized. They grow mostly in the eastern grasslands of Cape Colony and northwards to Natal and the forests of Zululand and Lourenço Marques. Farther inland in the parklands and grasslands of the Transvaal seven species occur, all endemic, and one ascends to 4,000 ft. in the Drakensberg Mountains. Good photographs of living and coning plants, and drawings of the cone scales and seeds are provided.

Hybridization of *Lycopersicon*

ATTEMPTS to hybridize *Lycopersicon esculentum* and *L. peruvianum* have in the past failed, the failure apparently being due to the fact that any embryos formed as a result of the hybridization collapse about forty days after pollination. D. G. Smith, however (*Proc. Amer. Soc. Hort. Sci.*, 44, 413; 1944), reports success in culturing embryos removed from the 'seed' 35-40 days after pollination, on nutrient media. Out of about sixty embryos cultured, three grew on to mature plants which flowered abundantly, were self-sterile and sterile with *L. esculentum* but fertile with *L. peruvianum*. Development of this work may place new material at the disposal of the breeder of commercial varieties of tomato, and, in addition, throw light on the genetic problem that the genus *Lycopersicon* presents.

Dominance

L. C. Dunn and S. Glucksohn-Schoenheimer (*Proc. Nat. Acad. Sci.*, 31, 81; 1945) have continued the analysis of the characters due to *Sd* in the house mouse. In the original stock there was an absence or shortening of the tail, absence or abnormality of one or both kidneys and absence of an anus and genital aperture. The gene *Sd* acted as a dominant regarding length of tail, and a recessive in respect to lethality. On introducing the gene into other lines the authors find different effects. In one line the heterozygotes are almost tailless and inviable; in another line the length of tail increased in the heterozygotes but the viability was lowered. In a third line the tail became shorter

but the viability increased. The authors therefore conclude that the several effects of *Sd* upon the heterozygote are modified by different genetic factors. They hold that the evolutionary significance of factors effecting dominance can be properly assessed only when their physiological effects are known.

Geology of the Lau Group Fiji

DURING 1934, H. S. Ladd and J. E. Hoffmeister made a geological study of twenty-six of the small Fijian islands known as the Lau Group. The results of their investigations, together with reports by other authors on the igneous rocks, limestones, foraminifera, echinoidea, barnacles and decapod crustaceans appear in Bull. 181 of the Bernice P. Bishop Museum (Honolulu, 399; 1945). The oldest rocks, andesitic pyroclasts and flows, are widely exposed and make the foundations for a series of Miocene limestones. Most of the islands are distributed on a simple grid of north-west-south-east and north-east-south-west lines, which probably represent the fractures along which the volcanic centres became established. After some truncation by wave action, limestone deposition began in the Lower Miocene. The formation is rich in algae and foraminifera, but poor in corals, suggesting accumulation at a depth of more than 50 fathoms. A period of emergence followed with formation of numerous, and often coalescing, sink holes and caverns. A second outbreak of volcanic activity then occurred (Upper Miocene), with eruption of agglomerates and flows of olivine-basalt from several centres. Submergence during the Pliocene is indicated by the local occurrence of the shelly limestone containing coral heads. Intermittent uplift and terrace development followed the close of the Tertiary. Remnants of Pleistocene coral reefs are preserved in some of the islands and odinite lavas appeared on two of them. A detailed discussion is given of the development of the present topography. The well-known hypothesis of W. M. Davis that "all the varied features of the many islands and reefs . . . can be simply reconciled if it may be assumed that a broad and low sea-floor anticline, preceded and followed by a sea-floor syncline, has slowly migrated westward into the Fiji region" is shown to be inconsistent with many of the new observations.

Uric Acid Content of the Keratinous Integument

ABOUT a hundred colorimetric determinations (Folin, O., *J. Biol. Chem.*, 106, 311; 1934) on hot aqueous extracts of defatted feathers, quills, hairs, claws, hoofs and horns obtained from sixteen different animal species representing bird, monotreme, marsupial, ungulate, rodent, carnivore and primate indicated a uric acid content ranging from 4 to 540 mgm. per cent. In approximately half the specimens tested it exceeded 100 mgm. per cent. From the fur of rabbit (A. Bolliger and M. H. Hardy, *Aust. J. Sci.*, 7, 59; 1944), cat and dog, uric acid has been isolated in crystalline form and definitely identified. In other instances uricase added to the extract was found to destroy most of the chromogenic material. Therefore, comparatively large though varying amounts of uric acid were always present even in what is generally considered to be pure keratin. This indicates that uric acid is a constituent of the protein keratin.

Damping Capacity of Materials

THE information in a report by Prof. F. C. Thompson, "Damping Capacity, a General Survey of Existing Information" (London: British Non-Ferrous Metals Research Association, 1944), corre-

lated from a survey of published works on the subject, has important applications to machine parts subjected to vibration or rapidly alternating stresses. Definitions of damping capacity differ considerably, but in general it may be expressed as "that property of a solid in virtue of which it can, of itself, dissipate internal vibrations, and hence prevent their attaining dangerous dimensions". The report discusses the physical and mechanical meaning of damping, and the relationship to the elastic properties of materials; the influence of metallographic factors such as crystal structure and the effect of the frequency of the stress cycle. The experimental measurement of damping capacity receives considerable attention and discussion in detail, such widely different methods as calculation from the normal stress-strain diagram and measurements of the rate of decay of electrically induced high-frequency vibrations being applicable for this purpose. The different methods of measurement and of expressing the results naturally lead to variations in the value of the figure used to express the damping capacity of a material, and the author concludes by suggestions for the development of not more than two standard methods of measurement which would cover the field of practical requirements. A bibliography of fifty-eight references is included.

Steady-State Equilibrium of Parallel Alternators

A PAPER by Dr. J. C. Prescott (*J. Inst. Elec. Eng.*, 92, Pt. II, No. 28; August 1945) describes graphical methods of determining the equilibrium values of voltage and load for systems of paralleled generators working under certain specified conditions. Two main cases are considered: that of a number of synchronous machines in parallel supplying a load of constant power factor, when the operating voltage on a given load and the maximum stable load are to be determined; and that of a number of machines working on constant load, when the variation of voltage with changing power factor and the minimum power factor for stable operation are required. The principle of the methods is also extended to the determination of the reactance of the symmetrical three-phase fault which will just render unstable a system of generators each of which makes a specified contribution to a constant total load of known power factor. These solutions require certain assumptions, of which the more important are that the impedance of the interconnecting lines is negligible compared with the impedance of the alternators, and that, neglecting the resistance component and making some assumptions with regard to saturation, the impedance of the alternators can be represented as a reactance of known constant value.

Current Transformer Errors

THE flux density in a current transformer depends upon core proportions, frequency, ampere-turns and total burden. The errors are usually estimated by reference to data curves for the core material in which specific loss and magnetizing voltamperes appear as functions of flux density. While step-by-step calculation is simple and straightforward in individual cases, there is some advantage on general grounds, in view of the number of factors involved, in grouping these factors in a systematic manner which allows the whole position to be reviewed. An attempt to do this is made in a paper by G. F. Freeman (*J. Inst. Elect. Eng.*, 92, Pt. 2, No. 27, June 1945) and the resulting formulæ are alternatively expressed in chart form for quick reference.