

transition curves, and of the thermodynamic properties of these substances along the curves, have been given (for helium by Keesom, and for methane by Clusius and co-workers), so that the theoretical relations obtained by Lype can be checked by comparison with experiment. It is shown that the relations yield values for the physical properties which are in excellent agreement with those observed, even when Ehrenfest's equation (*Leiden Comm. Supp.*, 75b., 1933), which has been applied to second-order equilibria, leads to values twice as high as the observed values.

Certain transformations in metals, such as the transition at the Curie point from the ferromagnetic to the paramagnetic state, or between two forms of a crystal lattice, as observed, for example, for cobalt at 450° C., have been considered to represent equilibria of the third order. The equation for the third-order transition curve is used to calculate the variation of the transition temperature with pressure, and in the case of nickel at the Curie point, for which reliable experimental data exist, good agreement is obtained between the value calculated by Lype and the experimental value determined by Englert (*Z. Phys.*, 97, 94; 1935).

Although the existence of a fourth-order equilibrium has not yet been observed, this order of equilibrium is of interest, as a means of extending the vapour pressure curve beyond the critical point. It is shown that the points of inflexion of various thermodynamical functions in the overcritical region can be regarded as such an extension, and some verification for this, though sufficient data are lacking, is obtained by comparison with the experimental values of the specific heat of high pressure steam in the overcritical region as measured by Havlíček and Miškovský (*Helv. phys. Acta*, 9, 161; 1936).

1/6 NATIVE CULTURE OF THE MARIANAS ISLANDS

THE Marianas Islands of Micronesia have not received so much attention from anthropologists as have most of the other island groups, and yet they present an extremely interesting field of study ("Native Culture of the Marianas Islands." By Laura Thompson, *Bernice P. Bishop Museum Bull.*, 184; 1945). Discovered by Magellan in 1521, these islands were a regular stopping place for the early voyagers, but the inhabitants were left practically undisturbed for about 150 years. In the middle of the seventeenth century, a permanent mission was established by a band of Jesuits supported by Spanish soldiers. The natives, who numbered about 100,000, were friendly but resisted conversion; however, with the help of the soldiers their resistance was overcome and the reduced population gave in to Spanish domination. The population was further diminished by other factors (disease, etc.), and in the first census early in the eighteenth century, only some 3,678 natives survived. These intermarried with the Spaniards, Filipinos and others, and a mixed population completely replaced the indigenous one, the cultures blending with influences both from the Old and the New Worlds to form a new pattern. To-day only the Chamorro language, altered by Spanish additions, persists.

There are, however, archaeological remains and a number of old Spanish documents from which much

can be deduced concerning the Chamorro, who are remarkable for their size and strength and for their fondness for the water. From these documents, Laura Thompson has pieced together a reasonably detailed account of the daily life and social structure of the vanished tribe, together with their material culture, and much of interest emerges. It is clear that the ancient Chamorro had an elaborate social organisation with matrilineal clans and village chiefs whose power was based mainly on inherited wealth and monopolies. The society was divided into three classes, the upper and middle consisting of sailors, carpenters, fishermen and warriors, which professions were not open to the lower and physically inferior class. Their economy was of the usual South Sea type, based on gardens, food collecting and fishing, but different in that rice was also cultivated.

Taking it all round, the ancient Chamorro had a highly developed neolithic culture which rivalled in interest the high centres of central and marginal Polynesia, and may be compared to the Indonesian or pre-Malay level in the Philippines.

K. RISHBETH

FORTHCOMING EVENTS

Wednesday, October 2

SOCIETY OF PUBLIC ANALYSTS AND OTHER ANALYTICAL CHEMISTS (at the Chemical Society's Rooms, Burlington House, Piccadilly, London, W.1) at 6 p.m.—Scientific Papers.

ROYAL INSTITUTE OF CHEMISTRY, NEWCASTLE-UPON-TYNE AND NORTH-EAST COAST SECTION (joint meeting with the SOCIETY OF CHEMICAL INDUSTRY, in the Chemistry Lecture Theatre, King's College, Newcastle-upon-Tyne), at 6.30 p.m.—Dr. H. J. T. Ellingham: "Chemical Metallurgy".

Thursday, October 3

PHYSICAL SOCIETY, COLOUR GROUP (at the Lighting Service Bureau, E.L.M.A., 2 Savoy Hill, London, W.C.2), at 3 p.m.—Mr. N. E. G. Hill: "The Recognition of Coloured Light Signals which are near the Limit of Visibility" and "The Measurement of the Chromatic and Achromatic Thresholds of Coloured Point Sources against a White Background".

INSTITUTION OF ELECTRICAL ENGINEERS (at Savoy Place, Victoria Embankment, London, W.C.2), at 5.30 p.m.—Mr. V. Z. de Ferranti: Inaugural Address as President.

PHYSICAL SOCIETY (in the Lecture Theatre of the Science Museum, Exhibition Road, London, S.W.7), at 5.30 p.m.—Prof. Max Jakob: "Some Experiments on Forced Convection".

CHEMICAL SOCIETY (at Burlington House, Piccadilly, London, W.1), at 7.30 p.m.—Scientific Papers.

Friday, October 4

SOCIETY OF CHEMICAL INDUSTRY, MANCHESTER SECTION (in the Lecture Theatre, Central Library, St. Peter's Square, Manchester), at 6.30 p.m.—Prof. E. K. Rideal, M.B.E., F.R.S.: "Physical Chemistry in the Dyestuffs Industry" (Ivan Levinstein Memorial Lecture).

Saturday, October 5

ASSOCIATION FOR THE STUDY OF SYSTEMATICS IN RELATION TO GENERAL BIOLOGY (at the Royal Botanic Gardens, Kew), at 2.15 p.m.—Exhibits and demonstrations on Modern Plant Systematics.

APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments on or before the dates indicated:

ASSISTANT CHEMISTS in the Chief Inspector's Department—The Clerk and Solicitor, West Riding of Yorkshire Rivers Board, 71 Northgate, Wakefield, Yorks, endorsed "Assistant Chemist" (October 1).

LECTURER IN ELECTRICAL ENGINEERING—Acting Clerk to the Governors, South West Essex Technical College and School of Art, Forest Road, London, E.17 (October 3).

HORTICULTURE INSTRUCTOR at the Pibwriwyd Farm Institute, Carmarthen—The Director of Education, County Education Offices, County Hall, The Castle, Carmarthen (October 5).

UNIVERSITY READERSHIP IN EXPERIMENTAL PHYSIOLOGY at University College—The Academic Registrar, University of London, Senate House, London, W.C.1 (October 7).

LECTURER IN CIVIL ENGINEERING—The Principal, Technical College, Normanton Road, Derby (October 7).

LECTURER IN THE DEPARTMENT OF PHYSIOLOGY—The Secretary, The University, Aberdeen (October 11).