

Research Items.

THE TABOO OF WOMEN AMONG GYPSIES.—The *Journal of the Gypsy Love Society*, now happily revived with good prospects of success, publishes in its opening number an article by Mr. T. W. Thompson on "The Uncleaness of Women among English Gypsies," which brings us back, in this England of ours, to savage taboos which Sir James Frazer has copiously illustrated in the "Golden Bough," and reminds us that the Gypsies are a foreign, oriental race established in our midst. Women, not only at special periodical seasons, are treated as impure. Gypsies will destroy any piece of crockery or any cooking utensil touched by a woman's skirt: no woman may walk over a stream or spring from which drinking water is taken, lest it may become defiled: and this power of contamination without contact applies to things like crockery: "Suppose now," said a girl, "my mother or one'm the girls had stepped over the tea-things as we was getting our teas, d'ye think my father'd ha' eaten another bite?" Women engaged in cooking never touch "red meat"—beef, mutton, or liver—but roll up their sleeves and put the meat into the pot with a fork. Men object to women using for washing up the crockery the soap they use for washing themselves. The article deserves consideration as describing a remarkable survival of taboo among a civilised race.

THE TOMB OF CONFUCIUS.—The *Museum Journal*, issued by the University of Philadelphia (vol. xii., No. 2), is devoted to an article by Mr. C. W. Bishop on "Shantung, China's Holy Land," and the tomb of Confucius. The cult of T'ai Shan, holiest of mountains, belongs to Taoism, the real creed of the common people, contrasted with that of Confucius, whose teachings represent the ideals of character and conduct of the ancestor-worshipping feudal aristocracy to which he belonged. There is also a goddess of T'ai Shan, but the most striking fact about the religion of China in feudal times is the entire absence of female divinities. Some forty miles south of the holy mountain, at Chu'u-fu, is the tomb of Confucius, a splendid temple within which is the gigantic seated figure of the sage, arrayed in royal robes, and round him statues of his principal disciples. The cemetery, said to be thirteen miles in circumference, contains tens of thousands of the graves of his descendants, perhaps the most wonderful graveyard in the world, continuously occupied by the descendants of a single man for more than two thousand years. The excellent photographs accompanying the article enable us clearly to realise this Chinese Holy Land.

NATURALISTIC ART IN EGYPT.—Under the heading "A New Chapter in the History of Egyptian Art," in the February issue of *Discovery*, Dr. A. M. Blackmann describes a new development of naturalistic art found in the tombs of the barons of Cusae, the modern Kusiyeh, about 200 miles south of Cairo. It is possible that this school of art did not originate locally, but at Heracleopolis Magna, the capital during the Ninth and Tenth Dynasties, which lasted from about 2500 to 2220 B.C. There is nothing quite so realistic and vigorous in the art of Memphis as the Cusite sculptor's representations of the lion catching a bull by the muzzle, the hartbeests, antelopes, and gazelles pursued by the hounds, and, more wonderful still, the tense, nervous figure of the noble hunter, raising himself on the toes of his right foot as he leans forward to discharge an arrow from his

bow at the flying deer. Equally remarkable are the figures of two fellahin binding a bundle of papyrus reeds, the typical hulking Upper Egyptian yokels, the butt of the town-bred clerk in a coffee-house. Dr. Blackmann's review of this notable chapter in the art of Egypt is in every way to be commended.

MOUNT EVEREST MAPS.—During the Mount Everest expedition of last year Major Morshead and his plane-tablers mapped the whole country traversed on a scale of 4 miles to 1 inch, with the exception of the area within 10 miles of Mount Everest, which was surveyed photographically by Major Wheeler. On the return of the expedition this map was rapidly reproduced in colours by the Survey of India. The *Geographical Journal* for February contains a reduced reproduction on a scale of 1:750,000 of Major Morshead's map in outline, time being insufficient for the preparation of a hill shaded or hachured plate which has now been taken in hand. On this sheet the area around Mount Everest has not been taken from Major Wheeler's photographic survey, which did not reach London in time, but has been filled in by a map constructed at the Royal Geographical Society from panorama photographs. The positions of certain stations east and west of the mountain were resected from the few peaks the positions of which had been triangulated from the plains of India. When these stations were fixed other points could be intersected, and a framework was thus constructed on which the topography was sketched from photographs. This map is also reproduced, but on a scale of 1:100,000.

NEW SURVEYS IN KERGUELEN.—Considerable additions to the chart of Kerguelen were the outcome of Capt. R. Rallier du Baty's expedition in the *Curieuse* in the southern summer of 1913-14. Previous surveys of the coasts were very incomplete in many parts and little of value had been done since the visit of the *Challenger* in 1873. Capt. du Baty's work, the publication of which was delayed by the war, now appears in *La Géographie* (January 1922) in a revised large-scale chart of Kerguelen, on which many new soundings appear, and two sheets of harbour plans. Six harbours were surveyed in detail, including Port Curieuse, an unexpected discovery on the smooth storm-beaten west coast. Three other harbours were partly surveyed. The charts are admirably reproduced in colour. Some meteorological data for six months are appended to the paper.

NUCLEAR DIVISION IN OPALINA.—Prof. R. W. Hegner and Dr. Wu (*American Naturalist*, vol. 55, pp. 335-46, 1921) have analysed the relation between growth and nuclear division in the well-known multinucleate ciliate Opalina, from the frog's rectum, based on the study and measurements of 455 specimens. The investigation was undertaken with the view of affording further evidence on the nucleocytoplasmic relation theory, according to which an increase in the amount of cytoplasm as compared with the amount of nuclear material furnishes the stimulus which initiates nuclear division. The multinucleate condition and the absence of cell-walls make Opalina a favourable object for such study. By comparing the area of specimens in various stages with the number, size, and state of division of the nuclei the authors have been able to determine approximately the amount of increase of cytoplasm which stimulates nuclear division in Opalina. Nuclear

division in this multinucleate organism is not synchronous; one nucleus is usually stimulated to divide before the others, and this division is, for the time, sufficient to re-establish the normal relations between nuclei and cytoplasm.

VARIATIONS IN ORGANS OF AURELIA.—It has long been known that considerable variation occurs in the number of radial canals and tentaculocysts in Aurelia, but only recently has investigation been made as to whether the ephyrae produced by individual strobilae were always normal, or, if abnormal, were similar in their abnormalities. Mr. J. W. Low has published (Proc. Roy. Phys. Soc. Edinburgh, vol. 20, pp. 226-35) an account of his observations on twenty-seven productive strobilae, each of which was kept in sea-water in a separate vessel. The ephyrae were examined in the order in which they were produced. The largest number of ephyrae given off by one strobila was twenty-eight; the average production per strobila was about ten, and the total number of ephyrae examined was 278, of which 90 showed major or minor abnormalities. Six of the strobilae produced only normal ephyrae having the usual eight arms and tentaculocysts, four pairs of gastric filaments, and four mouth-lappets. The remaining strobilae produced ephyrae some or all of which exhibited departures from the normal. The same strobila may give rise to normal ephyrae and to ephyrae having more or less than the normal number of arms, and in particular cases there was found to be abrupt discontinuity, e.g. from a four-rayed to a twelve-rayed form. The extremes of variation were represented by three-rayed and fourteen-rayed examples.

MICROSCOPE OBJECTIVES.—The problem of improving the design of microscope objectives in the near future has been taken up seriously in the last few months, and three suggestions have been made for the more accurate measurement of the errors to which such objectives are subject. It is rightly felt that better methods of testing must be introduced before the objectives themselves can be improved. Mr. Martin at the November meeting of the Optical Society suggested a modification of the Hartman test by transmitting the beam from the objective through separate small holes in a screen; Mr. Twyman in the November number of the *Philosophical Magazine* suggested a modification of his interference method, and Dr. Hartridge in October showed to the Cambridge Philosophical Society the curves he had obtained by a third method. He restricts the beam entering the objective to a small area and determines by means of a micrometer the lateral change of position of the image of a small object. The change is reduced to unit magnification and plotted against the portion of the aperture used, expressed as a fraction of the numerical aperture of the objective. The shape of the curve obtained gives the curvature of the field, and the magnitude of the spherical and chromatic aberrations present.

TREATMENT OF SURRA IN CAMELS.—Antimony salts such as tartar emetic are frequently curative for diseases caused by protozoal and other animal parasites, e.g. in oriental sore and kala-azar caused by *Leishmania*, bilharziasis caused by a fluke (*Schistosomum*), etc. Capt. H. E. Cross finds that injections of tartar emetic cures camels affected with surra, a disease caused by a trypanosome. Different methods of administration were tried, and of 51 animals treated, 31 were cured (Dept. of Agriculture, Punjab, *Veter. Bull.* No. 2 of 1920).

ENZYME ACTION AND X-RAYS.—In the *Archives of Radiology and Electrotherapy* for January (No. 258) Mr. R. D. Lawrence records experiments on the effect of X-rays on enzyme action. The diastatic ferment of human blood and urine was chosen for the investigation. Radiation was performed with a Coolidge tube at 9 inches from the anticathode, with a $5\frac{1}{2}$ -inch gap and unfiltered radiation at 2 milliamperes in the secondary. The radiation was carried out for from 1 minute up to 20 minutes. In no case had the radiation any effect on the enzyme action.

ANTI-OXIDATION.—During the study of the changes undergone by acrolein on long standing, it was noted by C. Moureu and C. Duffraisie that the spontaneous oxidation of this substance by an "Autoxidation" was influenced in a very marked manner by traces of impurities. Further investigation of this process (*Comptes rendus*, January 30) led to the unexpected discovery that the autoxidation of a large number of substances is prevented by the presence of certain bodies, named by the authors anti-oxidisers (*anti-oxygènes*), and this property is connected with the presence of the phenol group. Thus, the oxidation of benzaldehyde is prevented by the addition of a twenty-thousandth part of hydroquinone. Hydroquinone, pyrocatechol, and pyrogallol are especially active in preventing oxidation; ordinary phenol, resorcinol, guaiacol and the naphthols also act as anti-oxidisers, but the proportions required differ in each case. As an exception, phloroglucinol is without action, and in this connection it is recalled that phloroglucinol often reacts as a ketone. In the presence of a suitable proportion of an anti-oxidiser, furfural remains colourless, acrolein gives no precipitate of disacryl, styrolene gives no resin on standing, linseed oil exposed in thin layers to air retains its fluidity for three years, fats (including butter) do not go rancid. Mineral substances, such as sodium sulphite and hyposulphite, are sensitive to the action of anti-oxidisers. The authors also consider the bearing of these facts on biology: phenols are fairly common in plants, generally absent in animals. It was found that the action of haemoglobin was not affected by phenolic anti-oxidisers.

THE EFFECT OF MOISTURE CONTENT UPON THE EXPANSION OF CONCRETE.—Bulletin No. 126 of the University of Illinois contains the results of a series of experiments upon the expansion of concrete carried out by Mr. T. Matsumoto, who has had some years of experience on harbour works at Formosa. The temperature coefficient of expansion of concrete is about the same as that of steel, so that these materials expand or contract together on heating or cooling. Concrete expands when it absorbs moisture and contracts when it is dried; the contraction causes stress in the concrete unless it is permitted to take place freely, and this stress appears to be not as small as is generally supposed. In reinforced concrete, the contraction may set up stresses in the steel which may reach the usually accepted working stress of steel when the reinforcement is less than 1.5 per cent. With 1 : 2 : 4 concrete and reinforcement greater than 1.5 per cent., shrinkage may produce stresses in the concrete approximating to its ultimate tensile strength, and such concrete is liable to develop cracks unless proper provision is made. The author does not consider that reinforced concrete is likely to be a durable material in places where a corrosive influence on steel, such as sea air, is active, unless proper protection against shrinkage cracks is made.