

Research Items

Clay Heads from Ashanti. Capt. R. P. Wild describes and figures in *Man* for January two heads of baked clay from Fomena, Ashanti, which were obtained by Mr. E. A. Burner, of the Political Service, from Nana Kobina Fori, the Omanhene of Adansi, whose capital town is Fomena. Kobina Fori, whose age is estimated at somewhere in the neighbourhood of eighty years, states that although these heads are not now made, he remembers them being made by an old woman when he was a boy. According to his evidence, they were placed on the graves of chiefs, elders, councillors and queen mothers, that is, the most prominent members of the Adansi tribe. At certain times offerings were made to the spirits which were supposed to have taken up their abode in the heads. For this purpose a baked clay ladle was required. The heads are well fired and are made of a fairly fine clay. They are hollow and almost life size. From the absence of the beard and the smaller head it is probable that one of the two heads represents a woman. The features of both heads are rather refined in comparison with the usual cast of countenance in the Ashanti race. This supports the statement that they are meant to represent chiefs, elders, etc., as the ruling classes of the Ashanti show distinct signs of refinement. The side view shows the typical long face of the Ashanti, but with an unnatural flattening of the back from the nape of the neck upward, giving an almost vertical profile. This may be due to artistic license. The conventional representation of the hair is interesting, it being rendered by whorls, cylinders and hollow balls. Kobina Fori stated that human hair (perhaps the hair of the deceased) was inserted in the holes in the cylinders and balls. The faces had been coated with red clay after firing, red being the mourning colour of the Ashanti. Facial markings, it is suggested, may be intended to counterfeit the cicatrices of an Akim slave as a disguise against evil spirits.

Cancer Mortality in the Australian Commonwealth. Deaths from cancer in the Commonwealth of Australia for 1931 per 100,000 of mean population were for males 105, females 97, persons 101 (Dr. M. J. Holmes, *J. Cancer Res. Com. Univ. Sydney*, 5, No. 3, 168; 1933). These rates show a considerable increase on those of the previous year and affected all States except Western Australia. The age-grouping of the population has, however, been altering since 1921, and the proportion of the population in the age-groups 45-64 and over 65 years is now larger than in a standard population, that is to say, a larger proportion of the population reach the 'cancer age' than formerly. Correcting for this, an actual diminution in the cancer mortality in the age-groups below 65 years has become evident in recent years, the rate for 1931 being lower than that for 1921 and for 1911. This diminution may justly be attributed, at least in part, to the efficacy of modern treatment. The mortality rate for sarcoma remains at about the same figure that it was twenty-five years ago.

Golgi Apparatus in Protozoa. Joyce C. Hill (*J. Roy. Micr. Soc.*, 53, Part 3, 1933) states that the Golgi apparatus in the Sporozoa agrees with that in the Metazoa in its reactions to osmic acid and resembles it in general structure and in juxta-nuclear position. During division, the Golgi elements are drawn to each

nucleus in approximately equal numbers as in dictyokinesis in Metazoa. There appears therefore to be a true Golgi apparatus in the Sporozoa but there is no such certainty for the other groups. In *Amoeba*, Brown describes globules with clear centres and dark rims which impregnate with osmic acid and may represent the Golgi apparatus, but no definite decision is expressed in the absence of silver impregnation, juxta-nuclear position or indication of dictyokinesis. Though there is evidence that in some flagellates and ciliates the parabasals and excretory apparatus show resemblances to the Golgi apparatus of Metazoa, "yet we can point to no cell inclusions which are similar in all and agree with all the criteria for the metazoan Golgi bodies. Possibly in some cases, e.g. *Opalina*, the Golgi apparatus is in a somewhat elementary condition, and the parabasal apparatus may also represent a not wholly differentiated Golgi apparatus."

Fungi causing Human Blastomycosis. A very interesting paper entitled "Observations on Fungi isolated from Cases of Blastomycosis cutis and Blastomycosis pulmonalis in North America and Europe. Remarks on Blastomycetin" appears in the *Journal of Tropical Medicine and Hygiene* of October 16. The authors are Sir Aldo Castellani and Prof. Igino Jacono, who publish photographs to show the almost terrifying severity of blastomycetic ulcers upon the human skin. The fungi which cause the diseases have been studied with a detail worthy of Sir Aldo Castellani's great resources. The present paper describes the cultural and microscopical characters of the organisms, but further work on inoculation is also in progress. Representatives of the genera *Torulopsis*, *Monosporium*, *Glenospora*, *Geotrichum*, *Phialophora*, *Acrotheca* et al. have been studied, and most of the species have been described for the first time. Tests have been made with monovalent and polyvalent blastomycetin, in order to see if it has any value for diagnosis.

Absorption of Calcium by *Terminalia glabra*, W. and A. Mr. B. L. T. de Silva, of the Department of Botany, University College, Colombo, in a communication to the Editor, directs attention to the remarkable manner in which *Terminalia glabra*, W. and A., accumulates calcium from the soils of the Miocene limestone of northern Ceylon. The water is usually softer in this area from wells near these trees, and the villagers in the dry zone burn the bark of the tree as a source of lime. In this region the ash of the leaf was 57-61 per cent CaO, of the bark 83-91 per cent. *Terminalia glabra* is a deep-rooted tree and may thus remove calcium from the deeper layers of soils whilst its leaves, rotting in the surface layer, may make this layer richer in lime than the leached surface soil out of the range of these falling leaves. Mr. de Silva cites figures of analyses of surface soils in support of this conclusion.

New Zealand Beech Timbers. Mr. Parkham, of the Cawthron Institute, Nelson, has published an interesting paper entitled "New Zealand Beech Timbers: Their Structure and Identification" (*New Zealand J. Sci. Tech.*, 14, No. 4, pp. 233-40; 1933). Beech forests are the dominant associations forming the subantarctic rain forest of New Zealand, and extend from the East Cape district, in the North

Island, down the mountain chains to Cook Strait, and so, too, in the South Island to Foveaux Strait. The object of the author's research is to describe the anatomical structure of the secondary wood in order to facilitate the identification of timbers after conversion. The species included in the scope of the present report are *Nothofagus Menziesii*, *N. Fusca*, *N. truncata*, *N. cliffortioides* and *N. Solandri*. The paper contains interesting data concerning the reactions of these beeches during seasoning, their supply, and a variety of commercial purposes for which they are suited. The author points out that there is a great tendency to warping, which is less marked in the silver beech (*N. Menziesii*). For some years silver beech timber has been exploited to a considerable extent locally, the annual production being about 8,000,000 superficial feet. It is used mainly for general building and constructional purposes, for box-making (butter boxes and cheese crates), for cooorage, farm implements, vehicle body-building, furniture, interior finishing and fixtures, and for turnery (Ward, 1929). The author comments on the fact that up to the present very little research has been carried out on these lines, Engler (1899), Solereder (1908) and Garrett (1924) being the only authorities who have published works dealing with this subject. Mr. Parkham stresses the importance of maintaining the large areas of beech forest which at present exist in New Zealand, both because of the necessity of perpetuating a forest covering on the water-sheds of the many rivers and streams, and also because of the potential commercial value of such areas (see NATURE, 131, 787, June 3, 1933).

Geology of the Society Islands. Bulletin 105 of the Bernice P. Bishop Museum (1933) is devoted to a report on the geology of Tahiti, Moorea and Maiao by Howel Williams, who paid a two months' visit to the Society Islands five years ago. The group presents an evolutionary series where volcanic cones may be studied in all stages of erosion and where the encircling reefs are revealed in all stages of development. A valuable summary is given, supplemented by many original observations, of the geomorphology and petrology of the Islands. Discussing the recent movements of the South Sea Islands, the author presents evidence that the Pacific floor of this region has been stable for a prolonged period. Maximum proved uplifts are 250 ft. for the Marquesas, 800 ft. for the Austral Islands, 230 ft. for the Tuamotus and 554 ft. for the Cook Islands; there is no indication of uplift for the Society Islands, save the relative change due to the recent fall in ocean level. The supposed evidences of submergence based on a study of drowned valleys are regarded as invalid, the effects of a rise of ocean-level following its fall during the glacial period being regarded as providing an adequate explanation. Local tilting is no more than is to be expected in islands of volcanic origin. The report is a well-illustrated and fully documented account of a group of islands that still offers a host of problems of fascinating interest.

Water-logging the Punjab. The problem of water-logging due to the general rise of the water-table over a large area is discussed by Dr. E. McKenzie Taylor and others in "An Investigation of the Rise of Water-Table in the Upper Chenab Canal Area, Punjab" (Research Publication, vol. 1, No. 4, Punjab Irrigation Research Institute). Statistical examination of the figures for well levels, rainfall and irrigation discharge show a

high correlation between rise of water-table and monsoon rainfall, but no correlation between rise of water-table and the amount of irrigation water supplied. The rise of water-table and the increase of irrigation are mutually exclusive. Dr. Taylor concludes that the rise of water-table can be controlled by the rapid surface removal of monsoon rainfall and recommends for this purpose the construction of storm-drains. Since these deal with surface water they need be of no great depths and would be cheap to construct and maintain. Deep seepage drains in the subsoil would also be of use, but would prove costly and do not appear to be a practical solution in an area of rising water-table which is not already water-logged. In short, they are not a prevention but merely a cure. Surface drains, on the other hand, should lead to a permanent fall in water-table.

Effect of Temperature on Energies of Photoelectrons. The *Physical Review* for December 1 contains two papers by Du Bridge and Hergenrother and by Roehr, on the energy distribution of photoelectrons from molybdenum at different temperatures. In the former paper, the normal component of the velocity of emission was studied by applying a retarding potential between a flat emitter and a parallel plate electrode; in the latter paper the total energy distribution was studied by placing the emitter at the centre of a spherical collecting electrode. The emitter was heated by an intermittent current and arrangements were made so that the photocurrent was collected with the heating current off. The results were analysed in the light of the theoretical work of Du Bridge based on a Fermi-Dirac distribution of the velocities of the electrons. The fit obtained between theoretical and experimental curves was satisfactory. The accuracy of the classical determination of h by the application of Einstein's photoelectric equation is brought into question, since these determinations involve an extrapolation of the tail of the photocurrent-retarding potential curve, which is now shown to depend on temperature. It appears, however, that the shape of the curve is such that simple extrapolation yields results which all differ by the same amount from the theoretical values at absolute zero of temperature, and the photoelectric determinations of h are probably unaffected by the temperature effect.

Sulphides of Zirconium. The information on the sulphides of zirconium was in an unsatisfactory state and the preparation of three definite compounds, ZrS_2 , Zr_3S_5 and Zr_2S_3 , by Pichon (*Bull. Soc. Chim.*, 53-54, 1269; 1933) has confirmed the existence of the first compound and added two new sulphides to the group. The method of preparation was to act on zirconium oxide at a high temperature with hydrogen sulphide. By heating first at 1100°-1200° and then raising the temperature to 1700°, a fused crystalline mass of Zr_3S_5 is obtained. On heating this at 900°-1300° in hydrogen sulphide, the black disulphide ZrS_2 is produced; and Zr_3S_5 on heating at 1400° for two hours in a cathode ray vacuum, or in hydrogen for one hour at 1700°, yields the brown Zr_2S_3 . All the products are crystalline. Evidence of the existence of Zr_3S_4 was also obtained. The chemical properties of the substances were examined and it was found that the action on numerous reagents was less pronounced with the compounds containing less sulphur.