

Research Items.

INHERITANCE FEES.—In *Man* for May, Mr. J. P. Driberg directs attention to an element in primitive marriage which appears to have escaped general observation, namely, the inheritance fees or dues paid by an inheritor of a widow to the responsible members of her family. Such a fee has been found to be compulsory among three unrelated peoples,—the Lango of Uganda, and the Dedinga and Bari of the Sudan. Among the Lango a widow is normally inherited by a brother of the deceased or by his sister's son, in either case a bull being payable to the woman's family. She is differentiated from the wives by being called an inherited wife. Among the Dedinga the deceased's brother pays the fee and calls the children his own, but if a sister's son or mother's sister's son inherits the widow the son pays the fee and claims any children of the new marriage. Among the Bari, when a sister's son inherits, the fee is paid from the estate and the children belong to the estate. This seems an anomalous custom, as the bride's family had already received the full price from the original husband. It arises from an intention of making clear the economic and social status of the children of the new marriage. Marriage is not regarded as completed until the birth of the first child. The bride may not be called a wife till then. Sometimes she only lives in the bachelor's hut until the child is born. In the case of a divorce the bride price is returned and the children go with the mother; but the father, even after years, may recover the children on payment of the "heifer of upkeep" to the family of the girl or her new husband. Among the Bari, if a marriage takes place without payment of the bride price, the wife's family take all the bride price paid at the marriage of the first daughter of the union. If there is no daughter the family keeps a son until he is ransomed.

THE SHISHAK MIGRATIONS.—Sir Flinders Petrie in *Ancient Egypt*, Pt. 4, 1928, states that the excavations at Gerar (Palestine) have produced repeated evidence of a movement from Central Asia to the west at about 950 B.C. Pottery models of square waggons with divisions from front to back and with two types of pottery wheels, one smooth, the other knobbed, are found. Similar waggons come from Anau, and knobbed wheels occur in the treasure of the Oxus, from 300 miles farther east. The latter wheel is designed to prevent sinking in sand and belongs to desert dwellers. Two types of bronze arrowhead come from Central Asia, one with a tang similar to a type found at Tomsk; the other is the triangular bladed arrowhead of Minussinsk, Altai, Perm, Siberia, and south-west Caspian. The broad-bladed iron dagger belongs to Anau, the Caspian, and Caucasus. Lastly, all the pottery figures of oxen are humped, a central Caspian type not found west of Mesopotamia. This movement, dated at 970 B.C., links with Shesheng, the 'Man of Susa' entering Egypt. Shushinak is the national deity of Elam, worshipped at Susa, and was also a great deity among the Persians. The attribution of Libyan descent to Shesheng is due to a misreading of the genealogy of Horpasen. His name labels his origin plainly. Further, owing to the practice of hepatoscopy, a Babylonian connexion has been suggested for the Etruscans. Now the horned head-dress of divination, the vases of offerings in Etruscan tombs in the shape of a cone with two globes over it, and other evidence point to a middle Asian origin for the Etruscans, and, it is suggested, link them up with the westward movement of Turko-mans, of which evidence is found at Gerar, and of which the coming of Sheshanq to Egypt formed part.

THE EXTERMINATION OF THE HEATH HEN.—The heath hen of America (*Tympanuchus cupido*), a near relative of the prairie hen which abounds on the prairies of the Mississippi valley, provides one of those problems of casual extermination which man seems powerless to stay. Fifty years ago the heath hen was a common bird on the island of Martha's Vineyard, to which it was confined. But about fifteen years since its numbers were reduced with remarkable suddenness. Attention was directed to the danger and thousands of dollars were spent in an effort to protect the birds. We now learn from a *Daily Science News Bulletin*, issued by Science Service, Washington, D.C., that even so late as 1916 there still survived about 1000 heath hens on the island reservation, and fears of their extinction were allayed. Then, just at the time when the hens were sitting on their eggs, a disastrous forest fire swept over the area, causing the loss of the year's brood as well as of many of the females. It is said that the inbreeding of the few surviving birds weakened the stock, which became subject to some of the common poultry diseases. Two years ago ornithologists were able to find only 30 specimens on the island; in a year the number was reduced to nine, a little later to three, and then to two. Now only a single specimen is known to exist—the heath hen of Martha's Vineyard is virtually extinct.

AN ALLEGED ANTHROPOID APE EXISTING IN AMERICA.—A discovery of extraordinary interest is that recorded by Dr. George Montandon in *La Nature* of May 11, where he describes from a photograph, which is reproduced, a supposed anthropoid ape from South America. A pair of the apes was seen by M. François de Loys in the virgin forests on the borders of Colombia and Venezuela, and the female was killed. It measured about 1.6 m. in height, and, as the photograph shows, had a distinctly human appearance. Moreover, the beast had no tail, and its teeth are said to have numbered 32, although, most unfortunately, the skull was afterwards damaged during the expedition and was eventually lost. On the strength of these characters, and particularly of its size and appearance, Montandon regards the creature as a new anthropoid ape related to the gibbons, but bearing a resemblance in its coat and in the proportions of its limbs to the orang-utan. Accordingly he names it *Ameranthropoides loysi*, after its discoverer, and makes use of its presence in America to support his theory of the parallel development of anthropoids in America, Asia, and Africa. On the whole, in view of the scanty evidence, we prefer the caution of Prof. L. Joleaud, who in a subsequent paper in the same number of *La Nature* suggests that the new monkey is probably not a true anthropoid ape, but a specialised relative of the spider monkeys (*Ateles*).

ANATOMY OF A FETAL AFRICAN ELEPHANT.—Dr. N. B. Eales (*Trans. Roy. Soc. Edin.*, vol. 56, Pt. I, 1929) completes her study of the African elephant based on the examination of a well-grown fetus. Previous parts dealt with the anatomy of the head and with the body muscles. The final part deals with the remainder of the organs. The most interesting feature in the anatomy of the elephant is the reduction of the pleural cavities shortly after birth by the ingrowth of trabecular connective tissue from the thickened costal and dorsal pleura. The result of the obliteration of the pleural cavities is to reduce costal movements during breathing to a

minimum and to make respiration in the elephant largely diaphragmal. The elastic tissue helps to control the powerful diaphragmatic movements so that the air is not sucked too violently through the long nasal tubes. The diminution of the collapsing power of the lungs consequent on their adherence to the walls of the chest has rendered intra-pulmonary cartilages unnecessary. In the light of her investigations, Dr. Eales discusses the relationships of the two living species of the Proboscidea, and the affinities of the group as a whole. She agrees with the view of the palæontologists that the African and Indian elephants should be placed in two distinct genera, *Elephas* (Indian) and *Loxodonta* (African). The characters of the two genera are summarised and the view adopted that they belong to different lines of descent. Discussing the affinities of the Proboscidea as a whole, Dr. Eales shows that their characters bear evidence of affinities with the stock from which sprang the rodents, Sirenia, Hyracoidea, and the primates, and that their nearest relatives are the Sirenia and the Hyracoidea. The Ungulates are not near them in descent. She therefore supports the modern view that the Proboscidea should be elevated to the rank of order and removed altogether from the Ungulata.

RECLAMATION OF MOSS LAND.—Although much work on reclamation of moss land has been done, the essential principles of the treatment have never been properly established. Some experiments, described by J. Gillies (*Scottish Journal of Agriculture*, 12, p. 126), have recently been carried out on a large tract of this type of land in Dumfriesshire, and some fundamental results obtained. Before any reclamation by manurial or other treatment can be attempted, effective drainage is essential. Dung was the best type of manure for the purpose, but it would be difficult to obtain in sufficiently large quantity for work on a large scale. Gradual improvement might, however, be secured by grazing stock introduced at intervals from fertile land. For correcting acidity, various forms of lime are suitable, but they all proved of little value unless phosphate was also supplied: the commercial grades of basic slag, mineral phosphate, and superphosphate are the types of phosphatic fertiliser most likely to prove of economic value. Potash and quick-acting nitrogen, on the other hand, produced no visible improvement. Direct seeding with grass and clovers in July yielded very good results if manures were supplied, particularly where dung could be given. Germination, however, failed completely on untreated moss or where lime only was added. Care was necessary to avoid overshadowing of the introduced species by the natural moss in the early stages of growth, tramping by stock or any other method which tended to consolidate the surface being very beneficial. Red and white clovers, cocksfoot, Italian and perennial rye grass, tall and meadow fescues all germinated freely and were easily established. Rose bay willow herb is a serious trouble in any reclamation work, and if strong measures are not taken to suppress it, the moss land may merely change to an equally valueless tract of willow herb.

HYBRIDISATION OF THE MOLLUSK *CERION*.—Dr. Paul Bartsch, Curator of Mollusks in the U.S. National Museum, has for some years experimented in hybridisation with various species of *Cerion*. In August 1928, whilst visiting the Tortugas Laboratory, he examined his enclosures in which had been placed young individuals of *Cerion viaregis* and *Cerion incanum* and succeeded in finding one adult which he claims to be a perfect hybrid (Year Book No. 27 of the Carnegie Institution of Washington, 1928). Criticism was

expressed after the original crossing experiments, because Dr. Bartsch had employed large groups (500 individuals), and it was suggested that the organisms claimed to be crosses were possibly mutations of one of the two species involved. To settle this point, restricted areas (cages or islands) were used, one virgin individual of each of the two species being placed in each isolated area. There was a large mortality, but in one cage the adult hybrid was found. This is identical with those assumed to be hybrids in the mass experiments; a result which was to be expected, as in no colony of *C. viaregis* nor *C. incanum* has any individual appeared comparable in appearance to the hybrids in question. It is to be hoped that more of these interesting forms will be forthcoming.

THE BREAD FRUIT OF TAHITI.—It is unusual in a modern botanical monograph to find a description of thirty-two varieties of a plant species which contains no scientific names. The bread fruit is usually regarded as a cultivated form of *Artocarpus incisa*, but according to Raoul the name 'bread fruit' should not be attached to the wild tree of Malaysia with fertile seeds described by Linnaeus with this Latin name, but should be restricted to the cultivated tree of Oceania, for which no other Latin name is at present available. Gerrit Parmile Wilder describes thirty-two varieties of this tree found growing in Tahiti and Moorea, the fruit and foliage of each variety being illustrated by photographs, in *Bulletin* 50, of the Bernice P. Bishop Museum. One of these varieties, 'Huera', produces true seeds, but all are propagated vegetatively, usually by root cuttings. This monograph describes fully the native method of preparing the fruit for the table, and the value assigned by the natives to the edibility of the different varieties. The author makes the interesting comment that he noted no insect, fungus, or other pest upon the bread-fruit tree, which has been in cultivation on these islands long before it was first seen by Europeans in the Marquesas in 1595.

VIRUS DISEASE OF PLANTS.—Recent work in Queensland, Australia, with which Prof. E. J. Goddard has been associated, seems to have demonstrated beyond doubt that the economically important disease of the banana known as 'bunchy top' is a virus disease with an aphid vector. An account of further work upon this disease, with suggestions as to its control, is given in Vol. 2, No. 1, of the *Journal of the Council for Scientific and Industrial Research of the Commonwealth of Australia*. Prof. Goddard has drawn upon his experience in this investigation in his presidential address to the Royal Society of Queensland, published in Vol. 40, No. 1, of the *Proceedings of the Society*. He evidently inclines to the view that the virus will be found in the category of living organisms, ultra-microscopic in size, and therefore presumably forming an intermediate step between the molecular organisms of the inanimate world and the cellular organisms of the visible animals and plants. He does not deal, however, with one puzzle which this point of view presents to the investigator. If such ultra-microscopic forms of life exist, why are they not to be found leading a saprophytic or even an autotrophic existence? Until now, attempts such as have been made by Hugo Mische (*Biolog. Centr.*, 43; 1924) to cultivate such ultra-microscopic saprophytic organisms have failed to produce any evidence of their existence.

DIFFERENTIATION IN THE SILL OF PIGEON POINT.—A valuable study by F. F. Grout of the association of anorthosite and granite with dolerite in the great 'diabase' sill of Pigeon Point, Minnesota, appears in the *Bull. Geol. Soc. America*, vol. 39, 1928, p. 555. A

chilled doleritic roof-phase intervenes in most places between the acid differentiates and the quartzite roof. Locally this phase contains abundant phenocrysts of labradorite, and these pass here and there into masses of anorthosite. These light masses apparently rose in the magma at an early stage because of their lower specific gravity. Some assimilation of quartzite by the magma is indicated, but it is suggested that the granite was probably formed essentially by differentiation, with assimilation as a merely subsidiary factor. The occurrence of granite at Pigeon Point is ascribed to the unusual thickness of the sill (250-700 ft.) which allowed ample time during cooling for differentiation to occur. The composition of the average dolerite magma is such that granite could be formed from it by crystallisation, or by the separation of partially miscible fractions, in about the proportions actually found at Pigeon Point. Numerical data indicate that probably much less than a quarter of the total granite was due directly or indirectly to assimilation of sediments.

TRANSMISSION OF SOUND WAVES IN THE EARTH.—The solution of the problem of underground communication through earth strata would be of great value to miners. Unfortunately, its solution offers great difficulties. The ideal method should enable miners to communicate no matter the nature of the strata, whether they are water bearing or not, and also whether they are broken up by old workings. The apparatus must be cheap, light, and able to withstand rough usage. A large number of experiments have been undertaken by the United States Bureau of Mines to find out the best way of communicating between miners entombed by a disaster and persons on the surface. As many of the bituminous coal mines in America are comparatively shallow, even a partial solution would be of value to them. In *Technical Paper*, No. 433, of the Bureau of Mines, experiments on communication by L. C. Ilsley, H. B. Freeman, and D. H. Nellers are described. Owing to the great developments taking place in radio, it was hoped that by this means communication could be established. The tests were made at the Bureau's experimental mine in Pennsylvania. Vertical antennæ were found to give the best results, but on the whole radio methods were found to be of little practical value. A promising method discovered was to connect the source of electrical energy (two dry cells) between a point on one side and a point on the other side of the coal seam. Some of the paths of current flow spread out to the surface and could be picked up by a telephone satisfactorily by choosing suitable earths. It was found, however, that this 'roof-to-rail' method was only practicable for the transmission of signals from the surface into the mine and was therefore only a half solution. Tests made with a geophone—an instrument which converts the earth waves made by hammering on the rock into an air wave which is heard in the ear as sound—gave good results. The simplicity of this method and of the requisite apparatus is greatly in its favour.

TEXTILES AS INSULATORS.—The usefulness of industrial research is well shown in an article by A. C. Walker on "Textiles as Insulators", which appears in the *Bell Laboratories Record* for April. Silk has been used for many years for insulating conductors owing to its much higher insulation resistance than cheaper fibrous materials like cotton. The fact that the insulation resistance of textiles is greatly diminished when moisture is absorbed, suggested that a research on the effect of moisture on textiles might discover methods of treating them which would improve their electrical properties. It was found that the con-

tinued application of voltage sometimes increased the insulation resistance a hundredfold. This was traced to the partial removal of electrolytic impurities. The most significant evidence of the importance of electrolytic impurities in silk, wool, cotton, and other textiles is the great improvement in their electrical qualities due to thorough washing with water. It was found that cotton washed with water from Lake Michigan had higher insulation resistance than cotton washed with distilled water in the laboratory. A saturated solution of magnesium carbonate was then used with encouraging results. Washing the cotton with a little calcium sulphate in it gave as satisfactory results as using water from the lake. As a result of the research the insulation resistance of cotton can now be improved by simple washing processes to such an extent that its use as a substitute for unwashed silk for telephone cords has been approved. It is estimated that for this purpose alone the annual saving effected in manufacturing costs to the Bell Company is about one hundred thousand pounds.

EFFECT OF DRYING ON THE PROPERTIES OF BENZENE.—The effect of intensive drying on the physical properties of benzene has been re-investigated by Briscoe, Peel, and Robinson, whose results are described in the *Journal of the Chemical Society* for March. Baker's previous conclusion that the density of benzene does not change upon drying has been confirmed, not only for the liquid as a whole but also for the various fractions obtainable by distillation. After drying for sixteen months, there did not appear to be any definite change in the surface tension, and any change that may have taken place would seem to be in the direction of a decrease. Baker, however, found a considerable increase after a year's drying, and attributed it to a change in the degree of association. The reason for this discrepancy is not apparent and the experiments are being continued.

CHEMICAL APPARATUS.—Messrs. Griffin and Tatlock, Ltd., have issued their new catalogue of chemical apparatus, No. 12A, as an attractive and well-illustrated volume of close on a thousand pages. The firm, which combines the former businesses of J. J. Griffin and Sons, Ltd., and Baird and Tatlock, Ltd., is established in London, Glasgow, Manchester, Edinburgh, and Liverpool. The volume is divided into 12 sections, which are further classified for convenience in the list of contents. The usual fittings and furniture of chemistry laboratories are illustrated not only with pictures but also with model plans and sections. A special feature of the Balance Section is the Christian Becker chainomatic balance, the action of which is fully described. In the section for physical chemistry will be found apparatus for measuring osmosis, surface-tension, etc., and also pyrometers and various kinds of electrical appliances. A section on micro-analysis opens with references to standard works where complete descriptions of methods of work will be found. The apparatus is specially designed for the methods of Pregl and Dubský. A large selection of the well-known Reichert microscopes is minutely described in the optical section, which also includes refractometers, spectrometers and polarimeters with various accessories, as well as optical benches, mercury vapour lamps, selenium cells, etc., and the Bausch and Lomb projection apparatus for which the firm acts as sole agent. Meteorological appliances, laboratory machinery, and apparatus designed for the special methods of assaying used in many different industrial processes form a prominent feature of the catalogue. At the end there is a fairly long list of chemical and technical books and of Kahlbaum's pure chemicals.