

## Research Items.

**EDINBURGH FOLKLORE.**—In the *Nineteenth Century and After* for July, Mr. Lewis Spence publishes the first instalment of a much needed study of the folklore of Edinburgh. He proposes to deal with his study under three heads: (i) Mythology, dealing with traditional material predominantly of a religious character; (ii) legendary tradition related to human personages or persons once actually existing; and (iii) folklore associated with ritual, popular customs or superstition. In the first section he shows that the Chapel of St. Triduana in Restalrig was in all probability originally a structure erected over a holy well serving as a place of immersion. The shrine with its holy well was a resort of pilgrims for the cure of blindness. St. Triduana is not in the Roman calendar and was probably a Celtic goddess who, on account of the similarity of the legend accounting for her blindness, is to be equated with St. Brigit, the goddess Brigantia of the Brigantes, and Sulina (Gael. Suil, "eye of life"), worshipped at Bath. Brounger, associated with the fishing suburb of Newhaven in popular tradition, was an old fisherman who when he did not fish himself asked for a few fish or oysters from his returning neighbours. If they refused, ill luck followed. He is equated with the thunder god through a tradition connecting him with a flint or meteorite suggesting the holy or lucky stones representing that deity. It is possible that he may be Perunu, the thunder god, of Rügen, linking up through the connexion of the North German fishers with Scotland, and also the Slavonic Bóg. A demon, Shellycoat, finds an analogy in Japan only, and a piper who disappeared in a subterranean passage from the Castle to Holyrood recalls the legend of Orpheus and other stories of that class.

**A NEW VIEW OF PILTDOWN MAN.**—In *Man* for July, Prof. F. S. Atwood of Bologna figures and describes his reconstruction of the jaw of Piltown man, which he compares and contrasts with the jaws of the orang and the chimpanzee. In his view its resemblance lies in the direction of the orang rather than that of the chimpanzee. He gives in tabular form eight points in which the orang differs from the chimpanzee, and in which the jaw of Piltown man, so far as its condition allows, is comparable with it. As a whole the jaw of the chimpanzee is relatively thin, slight, and light, while both orang and Piltown are massive and heavy; the ascending ramus is oblique in relation to the horizontal portion, but in the orang and Piltown almost vertical; the position of the semilunar notch coincides in the two jaws, but in both differs from its position in the chimpanzee jaw; the angle has a curvature of a large radius in orang and Eoanthropus, but it is small in the chimpanzee; the posterior margin of the chimpanzee ramus is narrow to the root of the condyle, where it widens rapidly, but in both the other jaws it widens gradually as it passes into the condyle. Again, the lower borders of the corpus of the mandible resemble one another in both orang and Piltown but differ from the chimpanzee, which also has a relatively small genial fossa as opposed to the large fossa of the other jaws. The reconstruction was therefore made by grafting the symphysian region of the orang's mandible duly enlarged on to the corpus of Piltown man's jaw, the conclusion being that the jaw is human, belongs to the same individual as the cranial fragments, and represents a primitive race belonging to a genus of the orang type. Not only is this because of the features of the mandible, but also because of the eyebrow ridges,

which do not exhibit the prominent torus characteristic of the chimpanzee type to which Neanderthal man belongs.

**INDUSTRIAL PSYCHOLOGY ON THE FARM.**—The National Institute of Industrial Psychology, in Report No. 2, records the results of an investigation into certain processes and conditions on farms undertaken by Mr. W. R. Dunlop. The results would seem to show that farm management in Great Britain is by no means efficient. It is unfortunate that so many discussions on agricultural problems are complicated by political motives. The present investigation is the first systematic attempt in Great Britain to apply the point of view and methods of industrial psychology to agriculture. Two problems were studied: (a) the picking and packing of fruit, including bush fruit, hops, and glass-house produce, and (b) milking. It is shown that the best pickers at one kind of fruit are the best pickers at all other kinds, that there is no evidence to show that afternoon rates are lower than those of the morning, that there are considerable individual variations in efficiency. The milking problems include discussions of milking rates, differences of cows, manual skill of milkers. Some very important questions are raised in the third section dealing with future enquiries, not the least of which is the selection of the right worker for the right work, and the guidance of young people leaving school into occupations for which they are most fitted. Apparently there is a tendency for the children of a lower level of intelligence and ambition to take up agriculture, the town attracting the more intelligent. In so far as this is so, it is to be deplored, but obviously the problems connected with such a choice are very difficult to attack, involving as they do the attitude of mind of the community towards agricultural work, the lower standard of nominal wages and the ties with regard to hours.

**THE SCIENCE OF ROWING.**—Among the papers read at the July meeting of the Institution of Naval Architects at Cambridge was one on "The Propulsive Efficiency of Rowing," by Mr. F. H. Alexander. In welcoming the Institution to Cambridge the Vice-Chancellor, the Rev. G. A. Weekes, spoke of the subject of rowing as of particular interest to Cambridge men, especially as it is a matter of controversy at the present time. There are two schools of thought, the old orthodox school and a new school, which has proved very successful over short courses. Mr. Alexander's paper recorded the results of investigations as to the magnitude of the forces employed by oarsmen and the utilisation of those forces, a racing 'eight' and a ten-oared whaleboat being chosen for consideration. Various tables were given showing dimensions, ratios, properties of hull forms, weights of boats and crews, amplitude of the movements made by the crews, the oars and the boats, together with the speeds at different points of the stroke. It will come as a surprise to many to learn that the power developed amounts to so much as 1.09 H.P. for each man in the 'eight' and 0.90 H.P. for each man in the whaleboat. The efficiency of the total work in an 'eight,' i.e. the ratio of the work done per minute by resistance (91,800 feet-lb.) to the total work performed by the crew (288,680 feet-lb.) works out at 0.318. In the whaleboat the efficiency is only 0.221. The paper was accompanied by diagrams, and some of the points raised in the discussion will be dealt with by Mr. Alexander in a written contribution to the *Transactions*.

CANCER IN EUROPE.—Prof. Eugene Pittard of Geneva contributes an interesting article to the *World's Health* for June (vol. 8, No. 6) on the distribution of the incidence of cancer among the anthropological races of Europe. Surveying Italy, France, Holland, and Switzerland, the fact seems to emerge that the Nordic race is more prone to be attacked than the Celtic, Mediterranean, and Adriatic races. The last named, which includes the northern Albanians, the Bosnians, Montenegrins and others, seems almost immune from cancer.

THE PARASITOLOGY OF PLAGUE.—In regional studies in the parasitology of plague (*Ceylon Jour. Sci.*, vol. 1, Part 5, 1927) Dr. W. Fabian Hirst remarks that the gradual reversion of plague from Europe at the end of the seventeenth century is one of the mysteries of epidemiology. Undoubtedly the substitution of the long sea route to the east round the Cape of Good Hope for the journey via the Mediterranean and the overland routes must have played an important part. But, he reminds us, bubonic plague is a disease of rats and the human epidemic is a mere offshoot of the epizootic, and therefore the fact which most requires explanation is the disappearance of the disease among the British rats and its failure to spread continuously when reintroduced among them. The generally accepted theory that the disappearance of plague from Britain is to be attributed to the replacement of the black rat (*Rattus rattus*) by the brown rat (*R. norvegicus*) is unsatisfactory, for the cessation of epidemic plague does not coincide with the appearance of *R. norvegicus* in England—it had been extinct for a generation when (in or about 1728) the brown rat reached England. The conditions prevailing in the wooden dwellings of old London with their large contents of grain, combined with defective scavenging and tolerance of large colonies of rats living in close association with man, amply suffice to explain the intensity of the historic human epidemics which devastated the city at fairly frequent intervals prior to the great fire. The former London plague season—June to December, with maximum prevalence in August and September—corresponds to the period of greatest prevalence of the flea *Xenopsylla cheopis* in Marseilles and Lisbon at the present day. The climatic conditions during plague years seem to have been especially suitable for the breeding of *X. cheopis*; during the great epidemics of 1636 and 1665 the summer was exceptionally hot and dry. That the disappearance of plague from Britain and Europe generally may possibly be due to a retraction of the area of *X. cheopis* prevalence is compatible with the known data.

ANTS OF THE CANARY ISLANDS.—In *Proc. Amer. Acad. Arts and Sci.*, vol. 62, April 1927, pp. 93–120, Prof. W. M. Wheeler contributes an interesting paper on this subject. He visited each of four of the larger islands during July and August 1925 and was able to collect and observe a considerable proportion of the ants known to occur in the Archipelago. He lists 56 species, subspecies and varieties now known, and by far the greater number have been taken in Teneriffe, the other islands having been little explored by entomologists. Nearly 70 per cent. of the total ant fauna is indigenous to the Canary Islands, while of the remaining forms, twelve are well-known south European and north African insects and five are tropicopolitan species. Among the latter the most important is the Argentine ant, *Iridomyrmex humilis*. Prof. Wheeler mentions that the banana plantations are suffering severely from this pest. Fear of closing the European markets to their produce has prevented the officials from announcing its presence, and Prof.

Wheeler states that he encountered it in enormous numbers on three of the islands visited. This ant does not attack the banana directly, but owing to its fondness for honeydew excreted by coccids it not only cultivates these sap-sucking insects on the foliage but also transports their larvæ from plant to plant.

BUTTERFLIES OF SAMOA.—The Trustees of the British Museum have recently undertaken the publication of an account of the Insecta and other terrestrial Arthropoda collected in the Samoan Islands during 1923–24 by Dr. P. A. Buxton and Mr. G. H. E. Hopkins. The material collected was obtained during the expedition of the London School of Hygiene and Tropical Medicine to the South Pacific. The monograph will be divided into eight parts, which will be subdivided into fascicules. The latter will not appear in serial order, each one being published as soon as completed. On completion of the work it is intended to issue an introduction, summarising the whole monograph, and drawing from it whatever conclusions as may be warranted. The first study to be issued is Part 3, Fascicule 1 (London: British Museum (Natural History), 1927. 5s. Maps: No. 1, South-West Pacific; No. 2, Samoan Islands. 6d.), dealing with the butterflies of Samoa and of neighbouring island-groups, by Mr. G. H. E. Hopkins. It is noteworthy that with the exception of the comparatively recent American immigrant, *Danaida archippus*, the butterflies inhabiting Samoa and the neighbouring groups of Islands are all Indo-Malayan in origin. Most of them are widely spread through Polynesia and appear to have reached Samoa by way of Fiji.

LIVING CELLS UNDER DARK-GROUND ILLUMINATION.—The late Dr. F. S. P. Strangeways and Dr. R. G. Canti employed dark-ground illumination for the study of the living cell in culture and of the effects of fixing reagents upon the constituents of the cell. (*Quart. Jour. Micr. Sci.*, vol. 71, Part 1, 1927). Cultures of the choroid and sclerotic, heart, kidney, intestine, and skin of the embryonic fowl were employed. When growing on the surface of the coverslip the cell is flattened, has an irregular 'feather-like' shape, and shows no true cell-wall, the outline being apparently caused by reflection from the interface between the cytoplasm and the surrounding culture medium. This outline is unceasingly changing, if the culture is observed in the warm incubator, and the cell wanders over the surface of the coverslip by slow amoeboid movement. Cells so observed show no nuclear membrane or Golgi apparatus. The centrosphere is seen as a cap over one side or end of the nucleus. The mitochondria appear to be formed in this region and to wander therefrom into the clear cytoplasm. Chromosomes can be distinguished in a dividing cell, but the most careful scrutiny failed to reveal a trace of spindle-fibres. The principal changes produced by fixing reagents were the formation of precipitate in nucleus and cytoplasm and shrinkage of these, distortion or destruction of the delicate cytoplasmic processes resulting in the cell assuming an artificially regular outline, the fusion of adjacent fat-globules, the modification or disappearance of the mitochondria, and the appearance of spindle-fibres in the dividing cell. Of all the reagents tested, 2 per cent. osmic acid produced the least change in the cell. The authors also describe the destructive effect of strong light (from the dark ground condenser) upon cells which had been fixed in a reagent containing chromic acid. The entire cell, with the exception of the fat-globules, was completely dissolved.

**REDIA AND CERARIA OF FASCIOLA.**—W. Rees Wright records (*Ann. Trop. Med. and Parasit.* 21, 1927) observations on the redia, cercaria, and cyst of *Fasciola hepatica*. Thomas's statement that the sporont and daughter rediæ are not to be found during the summer and autumn is confirmed; at that time of the year, rediæ produce cercariæ only. The redia is cylindrical and about 2 mm. long and 0.4 mm. in diameter; its wall is very thin—for the greater part of its surface it is only one cell thick. Delicate muscle fibres, longitudinal and transverse, appear to be present in the wall external to the principal layer of cells. In addition to the simple digestive system there is an excretory system consisting of numerous flame-cells and their ducts, the main groups of flame-cells being near the oral end and near the two processes of the body wall, as Thomas pointed out. The redia, as Thomas indicated, is not a passive parasite; Wright states that in the case of very thin shelled snails the rediæ may be seen devouring the liver tissue and moving through it. Wright describes and figures the position of the seven pairs of flame-cells of the cercaria. The cercariæ emerge from the parent redia through the birth pore, find little resistance to their movements in the eroded visceral mass, and escape from the snail through the respiratory aperture. Experiments with encysted cercariæ in artificial gastric and duodenal fluids suggest that complete digestion of the cyst walls takes place in the duodenum and not in the stomach. There is no definite evidence to show that *Limnæa truncatula* is the only intermediate host of *Fasciola hepatica* in Britain; observations are cited which suggest that *L. peregra* may also act as intermediate host.

**NON-MARINE MOLLUSCA OF THE BELGIAN CONGO.**—During the years 1909–15 the American Museum of Natural History maintained an exploring expedition in the Belgian Congo, under the leadership of Mr. H. Lang. The scientific results of that expedition, so far as the general invertebrate zoology was concerned, were published in the Museum's Bulletin, vol. 37, while a "Review of the Land Mollusks" by Dr. H. A. Pilsbry appeared in 1919 (*Bull. Amer. Mus. Nat. Hist.*, vol. 40, art. 1). Now, at long last, there comes to hand the companion volume on "The Aquatic Mollusks . . . With a geographical and ecological account of Congo Malacology" by Dr. H. A. Pilsbry and Dr. J. Bequaert (*Bull. Amer. Mus. Nat. Hist.*, vol. 53, art. 2). A bulky volume of 534 pages and 68 plates, with numerous text illustrations, it forms with its predecessor a complete monograph on the malacology of the vast territory of the Congo basin from the Atlantic coast to the great lakes of Central Africa, and will undoubtedly prove the standard book on the subject for many years to come. It is not to the malacologist alone, however, that the work will appeal, for the section on the zoogeography and ecology of the area will interest the general zoologist, and even the botanist and geologist. This topic seems to have been most thoroughly discussed and is well illustrated, text maps are furnished of the whole continent giving orographical details, rainfall, faunal areas based upon the distribution of birds, the hypothetical distribution of lake and river basins towards the close of the Pleistocene period, as well as other charts more immediately germane to the special subject. Twenty-two of the plates, moreover, are devoted to most excellent views of various habitats. The one defect of the whole work, and it is a big one, is the lack of any index. The Museum would do well if it would devote some future number of its Bulletin to an index to both volumes, and so crown what is a most important and valuable work.

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**NEW AMERICAN AND WEST INDIAN MOLLUSCA.**—Dr. Paul Bartsch has described some new species of West American marine Gastropoda (*Proc. U. S. Nat. Mus.* vol. 70, art. 10), mostly small representatives of the Tænioglossa and Gymnoglossa. The thirty-one species believed to be new, with some previously described by the author but not figured at the time, are illustrated on six plates. Mr. W. B. Marshall contributes a short paper (*Proc. U. S. Nat. Mus.* vol. 71, art. 6) on "A New Genus and Two New Species of South American Freshwater Mussels." The new genus, *Mycetopodella*, has been created for the reception of the remarkable elongated form of *Unio* originally described under the name of *Mycetopus falcatus* Higgins, but since successively described to several other different genera. The new species are *Anodontites guanarensis* and *Mycetopoda pittieri*. Dr. H. A. Pilsbry (*Proc. Acad. Nat. Sci. Philad.* vol. 79) describes *Ceratodiscus portoricensis*, n.sp., a small land mollusc from Porto Rico. The genus has hitherto been known by one species in eastern Cuba and another in western Hayti, so that the new discovery extends the range of this peculiar group eastwards.

**EARTHQUAKES IN NORWAY.**—The earthquakes of Norway have been studied from the year 1887, and in a recent paper (*Dagens Museum Aarbok*, 1926) Prof. C. F. Kjøddrup has described those of the years 1924 and 1925. This was a period of unusual infrequency, the yearly numbers being 5 and 8, and also of slight intensity, for only one shock disturbed an area of more than about 1500 square miles. During the twenty-five years 1889–1913, 479 earthquakes were felt in Norway and 358 in Great Britain. Thus, taking the areas of the two countries into account, the frequency of earthquakes in them is almost identical, the ratio being 385 for Norway to 394 for Great Britain.

**MICRODISSECTION.**—The issue of *Watson's Microscope Record* for May (No. 11) contains matter of considerable interest. Dr. Eric Ponder contributes an article on 'microdissection,' in which by means of fine needles carried in mechanical holders minute structures, such as protozoa and cells, can be dissected while being viewed by the microscope, and any particular element, such as the nucleus, removed. The method is comparatively new and has many possibilities. Mr. G. T. Harris contributes Chapter III. of his studies of the Desmidiaceæ and Mr. W. G. Royal-Dawson details for mounting pollens for the microscope.

**DISTANCE THERMOMETERS.**—Messrs. Siemens Bros., Woolwich, have just issued a revised list of electrical distance thermometers. Amongst the instruments described are some designed to meet the special requirements of refrigeration, and they reflect the influence of the scientific workers studying problems of refrigeration on the design of technical apparatus for industrial use. One thermometer is intended for use in the refrigerated holds on board ship, and by means of flexible metallic connexion may be fixed in position or removed in a few moments. The object is to obtain an accurate measurement of the temperature of the cargo itself, which may differ considerably from that of the air near the refrigerating pipes. Another installation illustrated is a special outfit for a large precooling plant in South Africa. This is fitted with switch gear for connexion to 149 thermometers. In addition, five anemometers are fixed in the air ducts and five anemometer counters are fitted on the top of the board. Another installation which is illustrated was made for a grain elevator plant and was fitted with 900 thermometers.