RESEARCH ITEMS

New Shrines on the Gold Coast

A RELIGIOUS development, which is in effect a reversion to a traditional form of belief, now taking place on the Gold Coast is described by Miss M. J. Field, Government anthropologist (*Africa*, **13**, 2; 1940). In the traditional society of the Gold Coast, which still survives in certain isolated areas, the governmental unit was the extended family with the head as both ruler and priest of the family god. So also in the confederated family groups, still existing, religious organization and governmental organization are one. In other parts of the Gold Coast, for example, Akim, this traditional form has been overthrown. From the end of the seventeenth century, colonists and refugees set up a military organization which has now, with the development of the cocoa industry, become financial. The earlier cults completely disappeared. Recent social changes, more especially a great increase in venereal disease, detrimental to fertility, and marital infidelity among the women, have led to a remarkable increase in belief in the power of the witch. New protectors against this malevolent force have been sought in the Northern Territories, where there is no witchcraft, because of the power of the traditional indigenous deities. Their worship has therefore been introduced into the Gold Coast country as a protective magic, subordinate shrines being set up. All over Akim these shrines have been instituted, and some have gained a far-flung reputation. It is suggested that the prevalence of these shrines indicates a reversion to a type of organization similar to that which was broken up by intrusions two hundred years ago.

Radium and Radon Therapy

A SECOND edition of "Physical Aspects of Radium and Radon Therapy", published in May, 1939, by the Ministry of Health of the Commonwealth of Australia, goes over some ground that is already familiar; but there are several new features, notably those on the technique of radon filling and on the comparative advantages of radium and radon considered from economic and technical points of view. There is also an interesting attempt to distinguish between the total dose of radiation given to the tissues and the effective dose that results; the difference only arises because of the power of the tissues to recover from the effects of radiation while it is actually being given. The authors, C. E. Eddy and T. H. Oddie, develop this matter on simple mathematical lines, but in lieu of experimental data have to proceed as follows: "Now suppose that a dose of gamma rays delivered at any given instant decays in its effect on the tissues by x per cent in 24 hours. . . ." Granted the assumptions, the following conclusions are reached: "(*a*) The quantity of radon required to give the tissues the same residual dose R′ in any given time as is given by one milligram of radium, is slightly greater than that required to deliver the same dose R. (*b*) When radon is used the residual dose R′ is higher for a longer period of time than is the case when radium is used."

Cytology of Carcinogenesis

DR. PULLINGER (*J. Path. Bact.*, **50**; 1940) has studied the early stages of tumour formation by polycyclic compounds. The carcinogenic compounds evoke a characteristic reaction on the second to fourth day after application; the cells and nuclei swell and the cytoplasm becomes vacuolated. This reaction is followed by multiplication of cells with progressive increase in size of cells and nuclei. Cytoplasmic degeneration appears in some of the cells while others show signs of recovery. Related non-carcinogenic compounds do not appear to produce this reaction, which may be specific.

Curious Nesting-place of Kittiwake

EVENTS in Norway have made the March number of *Naturen* the last we are likely to receive for some time to come, for the spreading of scientific news in popular form among Norwegian naturalists must give way to more vital affairs. Along with articles dealing with such varied subjects as the newer geophysical methods of assessing the underlying rock formations, and the occurrence of the jelly-fish *Rhizostoma octopus* in Norwegian waters in the Atlantic Drift, occurs an interesting account of a modification of nesting-place in the kittiwake. Instead of the usual sites chosen on the narrow ledges of sea-cliffs, Knut Schmidt-Nielsen describes how in 1928 kittiwakes (*Rissa tridactyla*) began to prospect the ledges of a wooden brewery at Røst, and how by the summer of 1939 twenty-one pairs were nesting in regular rows where suitable shelves were present on the building. The selection of so curious a site is the more remarkable because it was in close proximity to a constant stream of traffic, boats and motor-boats (*Naturen*, Bergen, 94, March 1940). An excellent photograph shows about fifteen of the nests, most of them occupied.

Stratification of Foraminifera in Marine Deposits

H. G. STUBBINGS has examined six cores obtained by the John Murray Expedition in the Southern Arabian Sea (John Murray Expedition 1933–34. *Sci. Rep.*, **3**, No. 3. "Stratification of Biological Remains in Marine Deposits". British Museum (Natural History), 1939). Only the Foraminifera are described in this report, the object being to demonstrate 'climatic' classification in the Arabian Sea similar to the findings of previous workers in the Atlantic. Many pelagic species occurred and a few benthic species. Of the pelagic species *Globigerina bulloides* and *Globorotalia menardii* are the commonest, and occur in inverse relationship. *Globigerina bulloides* is mainly a cold-water species and *Globorotalia menardii* is an inhabitant of tropical and sub-tropical waters. It has thus been found possible to use these two species as a guide to changes of climatic conditions in the past. Four 'cold zones' are shown in the longest core, containing *Globigerina bulloides* in quantity, and the intermediate zones with relatively more *Globorotalia menardii* probably represent warmer interglacial periods.

Inheritance of Instinct

VERY young setters will instinctively 'point'; Siamese cats are natural retrievers, a character which is known to be dominant in cats; the wooler rabbit jumps in the air and shaker mice turn somersaults when frightened. C. E. Keeler and H. C. Trimble (*J. Hered.*, **31**, 51–54; 1940) describe pedigrees of Dalmatian hounds which indicate that the position under or behind the coach automatically taken by the dog is controlled by heredity. Several interesting examples of instinctive reactions in untrained animals are given. 24 good following dogs and 3 poor followers descended from parents both of which were good coaching dogs. On the other hand, the crosses bad × good and bad × bad produced 7 good, 9 bad and 2 bad dogs respectively. One bitch which always ran with her head between the horse's legs was mated to a dog that trailed behind the carriage. The three pups trailed badly. The same bitch was mated to a dog which ran forward of the front axle. Of their resulting progeny, 6 pups ran in the forward position, and one insisted on running with his nose touching the horse's hind legs (see also NATURE, **144**, 671; 1939).

Chromosome Numbers of British Plants

IN connexion with the recent co-operative work in taxonomy, genetics, and cytology, P. Maude (*New Phyt.*, **39**, 17–32; 1940) has investigated the chromosome number of numerous British wild plants. Such plants as *Chenopodium album*, *Arum maculatum*, *Allium Babingtonii*, *Corydalis bulbosa*, *Sieglinga decumbens* ($2n = 124$), *Kœleria vallesiora*, *K. gracilis* ($2n = 28$ and 30), *Puccinellia* (*Glyceria*) *maritima* ($2n = 63$), various species of Festuca and Bromus and other plants were found to be polyploid. A curious feature was that seven plants of *Spirea filipendula* ($2n = 15$) from different sources had an odd number of chromosomes.

Cryolite as an Insecticide

FLUORINE compounds have so far proved the most effective substitutes for arsenical insecticides. Sodium fluosilicate, a by-product in the manufacture of acid phosphate, is being used extensively in the United States for baits in the control of grasshoppers and cutworms. Cryolite, a compound of sodium, aluminium and fluorine mined in Greenland, is very effective against fruit pests such as codling moth and apple flea weevil and for vegetable pests such as flea beetles. S. Marcovitch writes (*Amer. Fruit-grower*, Feb. 1940) on the use of cryolite in apple orchards. The mineral, which is used mainly in the manufacture of aluminium, is ground to a fine dust occupying about 50 cub. in. to the pound. Like lead arsenate, it acts as a stomach poison but is more effective than the former against codling moth. It has less sticking power, however, and is therefore most effective in dry seasons. It has no poisonous effect on the soil, a great advantage over arsenical compounds, which have rendered some soils in America unfit for crops. Another advantage is that it is non-poisonous in the amount likely to remain as spray deposit on apples. The amount allowed by law is 0·02 grain per lb. Fluorides present in drinking water to the extent of 1 part per million cause mottling of the teeth of residents in some parts of Arizona. Cryolite on apples has been shown to be free from this objection. In contrast to lead arsenate, cryolite appears to have no injurious effect on apple foliage. As many as seven applications in a season have been given without causing defoliation or damage to fruit. In some seasons, however, damage to peach fruits known as 'tip end injury' has occurred.

Irradiation of 7-Dehydrocholesterol

STEROLS which have received most attention in respect of photochemical conversion into anti-rachitics are ergosterol and cholesterol, associated with lower plants and with animal materials, respectively. Crystalline ergosterol may be regarded as the precursor of vitamin D_2 (calciferol); crystalline cholesterol does not itself constitute a significant provitamin but its derivative, 7-dehydrocholesterol, when exposed to ultra-violet radiation, is converted into vitamin D_3, found only in animal tissues. J. W. M. Bunker, R. S. Harris and L. M. Mosher (*J. Amer. Chem. Soc.*, **62**, 508; 1940) have examined the photochemical activation of crystalline 7-dehydrocholesterol in ether by monochromatic ultra-violet radiation. With wave-lengths 2483, 2537, 2652, 2804 and 3025 A., the activation is substantially uniform per quantum of energy supplied. On a quantum basis, the activation by 2967 A. is significantly greater than for any other wave-length examined, except possibly 2894 A. The activation by 2894 A. appears to be intermediate between that of 2967 A. and the other wave-lengths examined. No demonstrable antirachitic properties were produced by 3130 A. The superior effectiveness of 2967 A. parallels the significant superiority of this wave-length in inducing healing upon direct irradiation of depilated rachitic rats, which supports the view that 7-dehydrocholesterol is a significant precursor of vitamin D in the skin.

Spectrophotometric Gradients of some Northern Stars

AN important paper entitled "Relative Gradients of 250 Stars determined at the Royal Observatory, Greenwich" has been published by H. Spencer Jones (*Mon. Not. Roy. Astro. Soc.*, **100**, 3; January 1940). The catalogue of the spectrophotometric gradients of the 250 stars includes most northern stars brighter than 4·5, the H.D. spectral types of which are *Oe5*, *B* or *A*, as well as many fainter ones of these types and a selection of bright *F*- and *G*-type stars, and completes the Greenwich colour temperature programme. The previous results were given in "Observations of Colour Temperatures of Stars", 1926–32, and a description was given in this volume of the methods used in determining the gradients. These differ very slightly from those adopted in the later programme. The 30-inch reflecting telescope has been replaced by the 36-inch Yapp reflector, and in the case of fainter stars small corrections have been applied to allow of the difference in exposure time between the stellar and the calibration exposure. More sensitive Ilford 'Astra VIII' plates have been utilized in the later work, and it is hoped that full details of the scheme will appear later in a Greenwich volume which is delayed in publication owing to the War. As a definite value of the quantity needed to convert absolute to relative gradients is not yet available, relative gradients only are given in the catalogue. In the previous work the zero to which the gradients were referred was the mean of nine specified stars of H.D. type *A0*, and it is thought that the value for the Greenwich zero-point may be about 1·10, which corresponds to 15,600° K., but this will be determined later. The absolute values of the gradients and hence of the 'temperatures' will be obtained when the Greenwich zero-point is finally settled.