

to 10 c.c. of the extract. Incubation of spores with this mixture gave unmistakable evidence of division at the end of eight hours, and in forty-eight hours the products had separated, and were lying free within the sac wall. At a later period they acquired flagella, and several sacs discharged their contents, which appeared quite normal in all respects.

The fact that auxetics will cause the full development of these spores is important, and raises the question as to whether their presence may not be necessary under natural conditions, as it seems fairly evident that pond-water must contain auxetics, derived from the organic matter present, and it is quite possible that it may also contain augmentors in the shape of some of the alkaloids of putrefaction. Much work, however, remains to be done in this direction before the question can be regarded as definitely settled. From the available evidence, however, it seems to be clearly demonstrated that the products of cytolysis do cause cell-reproduction, and, that being so, it is very probable that it is absolutely necessary for a cell to absorb these auxetics before any reproduction is possible.

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The Lion in Sinhalese Art.

IN the notice of the new "Guide to the Collections of the Colombo Museum," which appeared in *NATURE* of January 9 (p. 523), the point was raised as to the source of the concept of the lion which occurs so frequently in Sinhalese art.

The lion has never been native of Ceylon, and the association of the symbol with the Sinhalese race may be traced back so far as B.C. 543, when a band of adventurers from northern India, led by Wijayo, landed in Ceylon. According to the *Mahawansa*, Wijayo's father was the offspring of a lion, and was called Sihabahu, or Sinhabahu (lit. "lion arm"). This legend is based upon the fact that the grandfather of Wijayo was probably an outlaw named Siha or Sinha ("lion"). Hence the name Sihala or Sinhala was given to Wijayo's kingdom, and the newly established race became known as the Sinhalese. In this way the lion became the national emblem, and, together with the sun, is depicted on the royal banner. Nevertheless, there is no Sinhalese heraldry, as the term is understood in Europe.

The lion was regarded as a symbol of royalty by the Sinhalese, hence the word *sinhāsena* (lit. "lion seat") was applied to the throne. In the Colombo Museum there is a stone lion standing about 5 ft. high, upon which was placed the throne of the kings when the seat of Government was at Polonnaruwa.

A monograph on the Sinhalese banners is shortly to be issued from the Colombo Museum, when the significance of the lion will be fully discussed.

JOSEPH PEARSON.

Colombo Museum, Ceylon, January 30.

THE BRITISH ANTARCTIC EXPEDITION.

(1) TRIBUTE TO THE DEAD EXPLORERS.

FULLER information and reflection on the disaster which overtook Captain R. F. Scott and his four companions in the Antarctic have served to intensify the national senses of bereavement at their end and of pride at the manner in which it was encountered, and both senses have

been given full expression. St. Paul's Cathedral was filled, and might have been filled again, on Friday last, when a memorial service was held. The King was present, and there also attended Queen Alexandra, the Prime Minister, and other members of the Government, representatives of the Opposition, of foreign Powers, of the Royal Geographical Society, of the Royal Society, and of many other bodies and institutions which were directly interested in the expedition, or with which its lost members were associated. Memorial services have also taken place at Portsmouth and Devonport dockyards and elsewhere. Expressions of regret have been received from many Colonial and foreign Governments and societies, and tributes of deep sympathy and appreciation have been paid to the memory of the dead by other workers in the polar fields—Dr. Nansen, Admiral Peary, Captain Amundsen, Dr. Charcot, Sir E. H. Shackleton, and others.

Prompt steps have been taken to fulfil the last wish of Scott, that those dependent on his companions and himself should not be allowed to want. On the part of the Government, it is stated that Captain Scott and Petty Officer Evans will be regarded as having lost their lives in action, and the pension due to their widows will consequently be enhanced. Further assistance, covering the necessities of the dependants of the other lost travellers, may be expected to be forthcoming from the public funds. The committee of the Antarctic Exploration Fund, of which Sir Edgar Speyer is chairman, is taking measures to the same end, and is also concerned to clear off the very heavy debt remaining upon the expedition, towards which Scott himself had pledged personal property, and which includes the recoupment of some of the survivors who have forgone part of the payment due to them. The question of the proper publication of the scientific results of the expedition is also involved. If the expedition had ended in success unshadowed by disaster, and if the leader had himself returned, means would have been open, which now are closed, for the discharge of these liabilities; the loss of his lectures, for example, must have a serious financial bearing on the whole position of affairs. In addition to the action of the Government and of the committee, a public subscription fund has been opened by the Lord Mayor of London; two London newspapers (*The Daily Telegraph* and *The Daily Chronicle*) have adopted a similar course, and collections are also being made under various official or unofficial auspices in various centres in the provinces and colonies. It may be added that, at the moment of writing, the Mansion House Fund has not been augmented with the rapidity characteristic of occasions of deep national feeling; it may well be that the public waits to learn what measures will be taken by the Government; but these cannot in the nature of the case be taken immediately, and there is ample scope for the proper use of whatever moneys may in the meantime be subscribed.

In addition to the above connections in which money is needed, a specified object of the Mansion House Fund and of some others is the provision of a national memorial to the dead. From such an object none can conceivably dissent; a generation which has recently criticised those preceding it for neglecting to set up a proper memorial to Captain James Cook could scarcely face the chance of incurring similar criticism in the case of Captain Scott; but the question of the form which should be taken by a national memorial is wide, and always involves much discussion and invokes many opinions. In all the present circumstances, however, much respect and consideration are due to a suggestion which emanates from Lord Curzon, who, as president of the Royal Geographical Society, addressed a letter to the Press on Saturday last, summarising the whole position as, but more fully than, it has been summarised above. In his concluding paragraphs he discusses the question of the form of a national memorial to Scott and his companions. "A national monument in a public place," "a memorial in our great metropolitan cathedral," are the suggestions which would come first to the minds of most men, but Lord Curzon qualifies them with the counter-suggestion that "the available sites for public monuments in London are few; nor does our artistic genius invariably find its best expression in masses of marble or bronze." Many would agree with this view, and might feel that some measure of more practical utility, such as the endowment of future scientific research in the Antarctic or Arctic region, would be a more fitting memorial to those who gave their lives in the advancement of that particular department of research.

Lord Curzon's suggestion, however, made on behalf of the Royal Geographical Society, is for the erection of a Scott Memorial Hall on a portion of the ground belonging to Lowther Lodge, which has recently been acquired by the society as the headquarters where it will very shortly be established. The society has hitherto held its large meetings in the theatre at Burlington Gardens; but since the Lowther property was acquired the ultimate provision of a hall of its own has been in mind. The disaster to Scott is an incident not only in national history, not only in the history of exploration, but in the history of the society itself; it befalls to synchronise with two other important incidents, the establishment of the society in new quarters and the broadening of the basis of its membership; on such grounds there is reason for a hope that the proposal for a hall specially devoted to lectures on geographical science and exploration should be fulfilled more speedily than in the normal course it would probably be, and should be identified with Scott's name; and it may well be suggested that the establishment of such a hall would be a most fitting form of national memorial, combining at once the public function fulfilled by statuary and the scientific function of a foundation for the advancement of geographical research. A national memorial of such form could

be entrusted to no more fitting keeping than that of the society which is the representative of the nation in the promulgation of geographical discovery, and has been so closely associated with the British Antarctic Expedition itself.

The scientific importance of the expedition, to which brief reference was made last week on the basis of the information which had been brought from the expedition last year, is immensely enhanced by the further results which Commander E. R. G. Evans has now summarised. First, it is a duty to pay one further tribute to the personal devotion to their scientific duties of Scott and his dead companions, for not only does it appear that through all the dreadful stress of the return march from the pole, down to March 12 (1912), when the thermometer was broken, they maintained meteorological observations, but it is reported also that they carried with them to the end a collection of geological specimens, a dead weight which they must often have been tempted to jettison; many would have done so, and none would have blamed the act. Commander Evans lays stress on the geological results of the expedition at large; and the main points of these results are referred to below. Investigations of the physical conditions of the ice were continued; these, together with meteorological, magnetic, gravity, and atmospheric electrical observations occupied Mr. C. S. Wright, while Mr. E. W. Nelson carried on hydrographic work; Mr. Cherry Garrard dealt with the preparation of skins of zoological specimens, and Mr. Lillie with marine biological collections. A new line of soundings is mentioned, extending from Banks Peninsula to 60° S., 170° W., and thence to 73° S., and an abrupt shoal, with only 158 fathoms' depth above it, is recorded in the middle of Ross Sea.

(2) GEOLOGICAL RESULTS.

The dispatch from Commander Evans published on February 15 deals especially with the geological results of the expedition; they were collected by the southern party under Captain Scott, by the northern party under Lieutenant Campbell—who was accompanied by Mr. Raymond Priestly as geologist—by the western party under Mr. Griffith Taylor, and by Mr. Priestly during the ascent of Mount Erebus in December, 1912. It is clear that each party secured most interesting and valuable information. All the parties have been working in areas that had been previously traversed by members of the National Antarctic Expedition, or by that under Sir Ernest Shackleton. It had been hoped that one party would have visited King Edward VII. Land, and have discovered the structure of the lands to the east of the Ross Sea, which were quite unknown until reached by Nansen's companion Johansen, who was serving with Amundsen. The abandonment of this project enabled the energies of the whole of Captain Scott's staff to be devoted to the further study of South Victoria Land.

Commander Evans's despatch is written in popular language, and the results cannot be judged until the receipt of a more technical statement. The difficulty of interpreting the cablegram is increased by some obvious verbal errors; thus the statement that in the volcanic series at Cape Adare "there was found an agglomerate of erratic bearing, many of the boulders being striated by ice action," is unintelligible. If it means that the old rocks there include a conglomerate of ice-scratched boulders, the discovery would be of much interest, especially if its age can be determined; it may mean that the volcanic rocks include an agglomerate, and that there is also a glacial boulder bed.

Commander Evans reports that the southern party brought back 35 lb. of geological specimens, which were apparently all collected from the Beardmore Glacier. The report published shows that this material confirms the conclusions based on the specimens collected by Sir Ernest Shackleton. His party observed seven seams of coal in

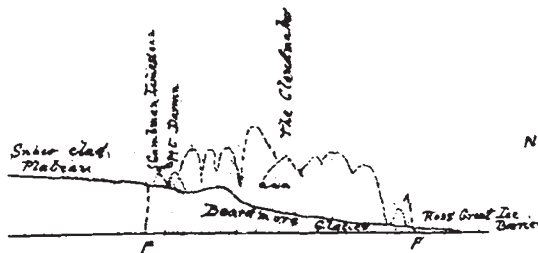


FIG. 1.—F, Faults bounding the mountain Horst. x, Coal seams in beacon sandstone. aaa, Limestone breccia with *Archæocyathus*, *Ethmophyllum*, *Solenopora*, etc.

the cliffs at the head of the Beardmore Glacier: one seam was 7 ft. thick, and four were each 3 ft. thick. The coal contained 69 per cent. of fixed carbon, and the sample tested was non-coking. The seams occur in the Beacon Sandstone, and the plant remains indicate that the age of this formation is either Upper Palæozoic or early Mesozoic. The fossil plants obtained by Dr. Wilson appear to be in better preservation, and it is therefore interesting to find that they confirm the age assigned to the Beacon Sandstone by Prof. David and Mr. Priestly. The other fossils obtained by the southern party are described as "corals of a primitive form, typical of the early Palæozoic Age." The Cambrian fossils obtained from the same locality by Shackleton include a coral allied to *Ethmophyllum*, and specimens of *Archæocyathus*, *Coscinocyathus*, *Solenopora*, as well as sponge spicules and traces of *Radiolaria*. The accompanying section (Fig. 1) from the report by Priestly and David shows the relative positions of the Cambrian and coal-bearing formations. The specimens of Cambrian limestones obtained by the southern party will probably yield important additions to the small Cambrian fauna collected by Sir E. Shackleton.

The northern and western parties have both been at work in areas of which preliminary surveys

have been made by the two previous expeditions, and they will no doubt add materially to knowledge of the area. The recovery of Prof. David's collection from Depot Island will probably enable him to fill in further details to his work.

Mr. Griffith Taylor, of the Australian Meteorological Service, who was geologist to the western party, has examined a coal seam in the Beacon Sandstone near Granite Harbour, while Mr. Priestly has studied the same formation near Mount Melbourne, and there obtained some large stems of fossil wood. These new plant remains should enable the age of the Beacon Sandstone to be more definitely established. Prof. David describes the formation as similar to the "Trias-Jura" of Tasmania, but he regards the evidence as only adequate to assign it to the Gondwana Formation; and it may therefore be as early as the Carboniferous or as late as the Jurassic.

The detailed survey by Mr. Priestly and Mr. Taylor will no doubt be found to yield more new information to the geology of South Victoria Land than is implied by the dispatch. Their work, for example, will probably settle the question at issue between the two former expeditions as to whether any of the granites are intrusive into the Beacon Sandstone.

It is also announced that the volcano rocks of "Rock Island," clearly a misprint for Ross Island, have been discovered to be older than was thought.

Mr. Priestly during the first season collected a series of rocks from the Cape Adare district, which was previously known from the collection made by the Southern Cross Expedition, and described by Dr. Prior. Mr. Priestly also ascended Mount Erebus by a different route from that followed by Prof. David; the lip of the crater was found to be 10,000 feet high, and the sledges were hauled to the level of 9500 feet. The volcano was in "mild eruption," and Mr. Gran was nearly suffocated by its fumes.

Mr. Griffith Taylor has measured the flow of the Mackay Glacier, and found that its rate is 80 ft. a month, a much lower speed than that of some Greenland glaciers, and less than that estimated for the Ross Barrier. With so competent a physiographer as Mr. Taylor, valuable contributions to the glacial geology of the area may be confidently expected.

Commander Evans's report directs attention to the interesting problem of former changes in the Antarctic climate. As the rich fauna living in the Ross Sea includes simple corals and sponges, the fossils from the Cambrian limestones do not prove any considerable change in the temperature of the Antarctic seas. The fossil plants and coal seams give stronger evidence than the fauna of climatic change. It is interesting to know that the Antarctic shared in the variations of climate proved for the Arctic regions by their well-known plant beds; but the extent and nature of the climatic change indicated by the Arctic fossil plants is still problematical.