

THURSDAY, NOVEMBER 14, 1889.

SCIENCE AND THE FUTURE INDIAN CIVIL SERVICE EXAMINATIONS.

THE following memorial, signed by a numerous and highly-distinguished body of resident graduates of the University of Cambridge, has been presented to the Civil Service Commissioners:—

"We, the undersigned resident graduates of the University of Cambridge interested in the study of natural science, understanding that a reorganization of the open competitive examination for the Civil Service of India is under the consideration of the Civil Service Commissioners, beg respectfully to urge on the Commissioners the desirability of widening the range of the examination so as to include the several branches of natural science. We think it especially important that the maximum number of marks obtainable by a candidate in natural science in the examination should be the same as that obtainable by a candidate in classics or in mathematics. In support of this opinion we venture to point out that the Natural Sciences Tripos, both from its numbers and from the rewards assigned by the Colleges to those of their members who distinguish themselves therein, is now of equal importance with the Classical or Mathematical Tripos.

"We have the honour to append a statement of the numbers who have during the last five years taken honours in natural science, classics, and mathematics. We inclose a copy of the *Cambridge University Reporter* of June 12, 1888, containing a report to the Senate and a schedule of the numbers examined in each branch of natural science in the years 1883-87.

"We would desire to call attention to the acknowledged educational value of the study of natural science, and to point out that the training which it affords, combining as it does both theory and practice, is such as peculiarly to fit a student for the pursuits of practical life.

"We beg to state that a deputation would be happy to wait on the Commissioners to explain more fully our views on the subject should it be their pleasure to receive them."

This memorial is signed, among others, by two Heads of Houses, thirteen Professors, and twenty Fellows. The memorialists, as will be seen, urge that in future competitions the position of a candidate offering natural science shall be not less favourable than that of those who offer classics or mathematics. And in a highly instructive schedule they show how important a place the study of the natural sciences has now attained in the University of Cambridge.

It may be unknown to many of our readers that the subject to which this memorial relates has lately become one of great importance, in consequence of a proposed reorganization of the higher branches of the public services in India. A Commission, which we believe sat in India, known as the Public Service Commission, has advised that the following changes should be made with the object of admitting natives of India to higher and more extensive employment in the public services:—

(1) That the strength of the Covenanted Civil Service should be reduced to what is necessary to fill the chief administrative appointments of the Government, and such a proportion of smaller appointments as will secure a complete course of training for junior Civilians. This

branch of the service to continue to be recruited by means of open competitions in England, at which natives of India should be allowed to compete unreservedly, and for which the maximum age of the Native candidates, and therefore presumably of the English candidates, should be raised to twenty-three years.

(2) That a certain number of appointments should be transferred from the Covenanted Civil Service to a local Civil Service, which is to be recruited, locally, from Natives and resident Europeans who satisfy certain prescribed preliminary conditions.

We do not know how far these proposals have been adopted by the home authorities, though we understand that they have received the general approval of the Indian Government. We will therefore only say, in passing, that they appear to be open to two serious objections.

First, that it seems a dangerous thing to select so limited a number of young men for the higher branch of the service by open competition, since doing so will give to each one of those who succeed almost the certainty of the reversion of one of the prizes of the public services. Under such a condition there will be far too little inducement for zeal in the service, and too little opportunity for selection and rejection when age and experience have developed the administrative powers of the selected men.

Secondly, unless care be taken to regulate the previous training of the candidates, as, for example, by requiring that every candidate shall have taken a University degree in England or India before presenting himself at the competitive examination, it is likely that well-taught rather than well-educated men will be selected, and that an inferior order of men will offer themselves, since many of the ablest men would be unable to submit to some years of private tuition, and to give up, as they would probably have to do, a University education for the chance of obtaining an appointment in India.

Whatever decision may have been made, however, it is of the utmost importance that the representatives of Cambridge who have addressed themselves to the Civil Service Commissioners should be supported in every possible way, and at once, by all those who have the interest of science and education at heart. For there is reason to fear that the Commissioners have contemplated the complete withdrawal of science from these examinations; and unfortunately many of the various regulations for the Army examinations which have been brought forward with their sanction in recent years give an air of probability to this suggestion. This is in no way weakened when we consider the extremely unfortunate position that science candidates for the Indian Civil Service have occupied under the administration of the Commissioners for many years past. This position, it should be said, has been due, not so much to the marks allotted to science in the present scheme, as to the methods adopted by the Commissioners in conducting their examinations, which have long caused it to be recognized by those who are engaged in the instruction of Civil Service candidates that, as a rule, only those candidates who are excellent either in classics or mathematics, or those who are distinctly good in both, have a really good chance of success.

But though all these facts give reason for regarding the rumour we refer to as very possibly correct, they need by no means prevent those who are interested in the question from entertaining strong hopes of averting such a national disaster as that which we fear. We have only to remind them of the very considerable degree of success that followed the efforts recently made by Sir Henry Roscoe and other leaders in science in the case of the examinations for admission to the Royal Military Academy at Woolwich. These efforts, we may remind our readers, not only resulted in an advantageous revision of the Woolwich examinations, but brought about satisfactory changes in the case of the Sandhurst competitions. In connection with this result it is satisfactory to observe, in the Report of the Civil Service Commission for 1888, that the Commission, in a letter directed to the Director-General of Military Education on July 10 in that year, have described the changes that had been submitted to them as likely to influence beneficially the education of officers in the army before they begin their professional studies.

Whatever difficulties there may be in the way of obtaining just treatment for science candidates under the new scheme for the selection of Indian civil servants, it has, we fear, become again imperative that men of science should unite to protest against the assumption that natural science studies are in themselves inferior as a mental training to the classical languages and mathematics, and to insist, so far as they may, upon such studies being placed upon a proper footing in this particular examination. This should be done in the interests of education, and still more of our Indian fellow-subjects, whose administrators should be men of as wide and liberal an education as possible, as has, indeed, been recognized in more than one public investigation of the regulations for these appointments.

THE LUND MUSEUM IN THE UNIVERSITY OF COPENHAGEN.

E Museo Lundii: En Samling af Afhandlinger om de i det indre Brasiliens Kalkstenshuler af Professor P. V. Lund udgravede Dyr- og Menneskeknogler. Udgivet af Dr. Lütken. (Kjöbenhavn: H. Hagerup, 1888.)

THIS work, as its title indicates, consists of various monographs, descriptive of the collections made by Dr. Lund in his interesting exploration of the limestone caverns in the interior of Brazil. These important finds are the fruits of nearly ten years' unremitting labour in the neighbourhood of Lagoa Santa, on the Rio das Velhas, in the province of Minas Geraes, where Dr. Lund prosecuted his researches from 1835 to 1844. On the completion of his cave explorations he presented the whole of his incomparable collections to the Danish nation. The gift has been duly appreciated, and now constitutes, under the name of the "Lund Museum," one of the most important paleontological sections of the Zoological Museum in the University of Copenhagen.

Dr. Lund inspected as many as 800 of the Brazilian *lapas*, or bone-caves, of which he had discovered 1000. Of these only sixty yielded any very interesting results, while scarcely half that number contained a sufficient

quantity of bones to demand any very prolonged investigation. In some instances, on the other hand, the mass of broken bones was so enormous that from the earth collected in a packing-case whose dimensions did not exceed half a cubic foot, he extracted 400 half jaw-bones of a marsupial and 2000 belonging to different rodents, besides the remains of innumerable bats and small birds. This discovery led to further research, and, after fifteen weeks' continued exploration, he found that one cave, which he had at first estimated to be about 25 feet deep, had a depth of nearly 70 feet, and was so densely packed with bones that the yield of 6500 barrels, of the size of an ordinary butter-firkin, justified the assumption that this special *lapa* contained the remains of seven and a half millions of animals, belonging for the most part to *Cavia*, *Hystrix*, and small rodents and marsupials, the estimate being based on the numbers of half jaw-bones extracted from the mould.

In these enormous cave deposits we have, according to Dr. Lund, and his biographer Dr. Reinhardt, a prehistoric ornithological *kökken mødding*, birds of prey having resorted to the *lapas* of Brazil as suitable retreats in which to devour their innumerable victims, whose fractured bones, belonging in almost equal proportions to extinct and living animals, have revealed to us many long-hidden secrets in the history of the changes which the Brazilian fauna has experienced in the course of ages. Comparatively few remains of the larger living mammals have been found, three caves only having yielded evidence of the presence of bears, of which, moreover, the bones of only five individuals were recovered. But while various groups, as *e.g.* the Ungulata, were sparsely represented, several families among the Edentata have contributed so largely to the bone remains of the Brazilian *lapas* that this order would appear to have constituted the most important section of the local fauna, both in past and recent times. Among the cave armadillos, Lund recognized several forms, differing only by their larger size from *Dasyfus punctatus*, and *D. sulcatus*; but besides these he found one of colossal dimensions, which, with a body of the size of an ox, and a tail 5 feet in length, exhibited differences of dentition which induced him to assign it to a special genus, to which he gave the name *Chlamydotherium*. A peculiar characteristic of this fossil animal, whose food he believes was leaves, and not insects, was the fusion or overlapping of several of the vertebrae into nodes, or tangles. In this respect it resembles the still more remarkable armadillo, of whose scales and bones he found enormous quantities, and which he described under the name of *Hoplophorus*. This animal, of which the different species varied from the size of a hog to that of a rhinoceros, was described about the same time by Prof. Owen, to whom various specimens of its bones had been sent from La Plata, and who established a new species for its reception, to which he gave the name of *Glyptodon*. The extraordinary rigidity of the shields of some of the Brazilian armadillos, the apparent immobility of the head, and the interlocking of the vertebral bones, make it difficult to understand how these unwieldy animals could have obtained their food. The most probable solution of the problem seems to be supplied by a study of the short massive hind legs, which, with their sharp and powerful claws,