

benefits on eastern tropical Africa as great as those which already stand to the credit of the Indian and Javan establishments.

Ever since the Tanganyika Territory came into British hands, however, the Amani Institute has been in a very uncared-for condition. For the first few years a director was in charge of the establishment, but as he had no officers working under him his duties were rather those of a caretaker than a director, and it was not possible for scientific work of any value to be done there at all, especially as he had to see to the proper care of the valuable instruments, books and specimens in the laboratories. In addition to the Director there has been a head gardener or Curator, who has been responsible for the plantations and for all the gardening work. These two officers have been in sole charge of the Institute. Since the retirement of the Director, the Curator has been the only European at Amani; and it is satisfactory to know that he has maintained the Institute and the grounds, and has been given the necessary help to look after the herbarium collections.

Amani properly constituted would serve not only as a centre for research, but also would be a valuable place to which the scientific workers attached to the Departments of Agriculture could go in connexion with the various problems confronting them in the several departments, while research officers at Amani would be engaged in working out the problems brought to their notice by the agricultural officers throughout these Colonies.

Another point of great value in such a place as Amani would be that scientific workers from home and from other parts of the Empire would be able to work at the Institute on scientific problems, as was the case in the past, and in the same way that botanists and other scientific officers are now able to carry out their researches at Pusa or Buitenzorg.

The matter of the re-establishment of Amani has, we believe, been under consideration at the Colonial Office for some years, and it seems unfortunate that instead of taking direct action from home, the various Colonies have been consulted as to whether or not they considered Amani would be of any value to them. Amani should be essentially an Imperial rather than a local institution, and it should be so maintained and extended as to serve as an agricultural research institute for the conjoint benefit of all the British Colonies and Protectorates in East Africa. In order that the Institute should fulfil its functions in the best possible manner, it should be independent of the control of any Department of Agriculture in these Colonies and Protectorates.

The potential value of Amani to the East African dependencies is immense, and it is essential that the Institute should be placed on a proper basis with as little delay as possible.

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The Protection of Wild Birds.

TWO years ago Viscount Grey of Fallodon introduced a Bill on this subject in the House of Lords, as was noticed in these pages at the time, but the measure did not succeed in becoming law before the dissolution. In the present Parliament a Bill has been introduced by the Home Secretary and at present awaits a second reading in the House of Commons. The new Bill closely resembles its predecessor, although the drafting and arrangement have been improved, and it likewise aims at giving effect to recommendations of the Departmental Committee which reported in 1919. It is intended to supersede all the existing legislation on its particular aspect of the subject, apart from the special Game Laws, and to secure uniformity, simplification, and greater effectiveness.

The Bill gives some general protection to all birds by the total prohibition of certain methods of destruction and capture involving obvious cruelty. Bird-catching is to be strictly regulated, and prohibited on Sundays throughout the year, and on highways and commons at all times. In addition, special protection is given to different species according to three categories into which all birds are for this purpose to be divided. Birds named in the first category, with their nests and eggs, are to be protected absolutely at all times. Birds named in the second category, with their nests and eggs, are to be protected absolutely during the close season. The third category comprises all other species; these, but not their nests and eggs, are to be protected during the close season except against the owner or occupier of the land and his agents. (The protection of nests is a useful innovation.) The general close season is from March 1 to August 11. The woodcock has a special close season from February 1 to August 31, and the nests and eggs of the lapwing are not protected against the owners and occupiers of the land before April 15.

The Home Secretary, and in Scotland the Secretary for Scotland, is to have power to vary the classification or the close season of any bird, either generally or locally. In particular, he has power to give the status of Category I. to all birds in any bird sanctuary; but he may make exceptions, which is a wise provision in view of the fact that the undue multiplication of a common aggressive species may be at the expense of the others which it is desired to protect. He may also grant exempting licences for scientific purposes. This is a useful provision, but care will be needed to discriminate between genuine investigators and the type of collector, especially of eggs, who levies special toll on rare species and does nothing to increase ornithological knowledge.

Permits are also to be necessary before any imported foreign bird may be released in Great Britain. The case of the little-owl has taught its lesson, for this alien has become a pest and a menace to other birds in some parts, and has also tended to discredit the native owls, which have in reality quite different habits. In the exercise of these various powers the Home Secretary and the Secretary for Scotland are to be aided by advisory committees. These bodies are already in existence, for their institution was a recommendation of the Departmental Committee which had not to await legislation.

The new Bill will introduce a welcome uniformity which is lacking under the present system whereby too much is left to the initiative of local authorities. In addition to administrative considerations, the migratory habits of very many species make it impossible to deal logically or effectively with questions of protection from a local point of view. Variations between one district and another have also brought the law into disrepute from its very complexity. In other ways, too, the new Bill is less cumbersome to administer and is simpler to understand.

Apart from simplification, the new Bill should be more effective than the present law. It increases penalties and the powers of the police. It also makes it easier to prove an offence. The onus is put on any person found in possession of illegally taken birds or eggs, and taxidermists are to keep registers of all specimens coming within the scope of Categories I. and II. Similarly, it will no longer be possible to expose "plover's" eggs for sale more than five days after the beginning of protection: an absurd anomaly will thereby be removed.

The new Bill is therefore greatly to be welcomed, and one may hope that with its official backing it may indeed come into operation on the date proposed, January 1, 1926. It may perhaps be criticised, however, on the ground that it does not go far enough. It is mainly uncommon birds that are listed in Categories I. and II., and there is not full protection for some of the common insectivorous species—for example, the swallow—which are universally admitted to be beneficial as well as beautiful. It may be answered that the law as a whole gains by avoiding the creation of too many offences, and in any event there will be power to add to the schedules without the difficulty of a fresh appeal to Parliament. The point may have importance when the question of international co-operation as regards migratory species again comes forward, as there is ground for hoping it will at an early date.

There are two general provisions which one misses from the Bill, although both were recommended by the Departmental Committee. It was proposed that

the advisory committees were to conduct investigations into the economic status of various species, something corresponding to the Hungarian Institute of Ornithology or the U.S. Bureau of Biological Survey being contemplated; at present, it does not appear that the committees are to be given the necessary machinery for performing this function, and they are defined as being purely advisory. The Departmental Committee also stressed the necessity for providing watchers for bird sanctuaries, because an unguarded sanctuary becomes the obvious prey of collectors and pot-hunters and is therefore worse than useless. The cost of watchers at a few selected places would be trifling to the central or local authorities, but it is nevertheless a heavy burden upon the available voluntary sources of funds for this national work.

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Egyptian Mathematics.¹

The Rhind Mathematical Papyrus: British Museum 10057 and 10058. Introduction, Transcription, Translation, and Commentary by Prof. T. Eric Peet. Pp. iv + 136 + 24 plates. (Liverpool: University Press of Liverpool, Ltd.; London: Hodder and Stoughton, Ltd., 1923.) 63s. net.

II.

AMONG the mathematical processes known to the Egyptians (for some few of which we have to go to the Berlin and Moscow papyri) were squaring and extraction of square roots, arithmetical progressions and simple geometrical progressions starting from unity, the solution of equations of the first degree, and a few simple cases of equations of the second degree. In geometry, or rather mensuration, they thoroughly understood the areas of square and rectangle; they knew pretty well how to deal with triangles, though precisely how much they knew is a more debatable matter; in a problem dealing with the truncated (isosceles) triangle, we recognise Hero's *τραπέζιον ἰσοσκελές*. They found the area of the circle by squaring $\frac{8}{9}$ of its diameter, a near approximation—giving $\pi = 3.160$ They knew the volume of the cube and rectangular parallelepipedon; they found the volume of a cylinder by multiplying its height into the area of its base; and one remarkable problem in the Moscow papyrus gives a correct solution for the frustum of a regular square pyramid. Their elaborate system of weights and measures Griffiths especially, and other writers, have sufficiently explained.

Towards the close of his admirable introductory chapter, Prof. Peet gives us a short but very interesting

¹ Continued from p. 902.