

are slow and deliberate (sic!), and, like the so-called praying mantis, it stands for long periods quite motionless, with the antennæ and mandibles extended, ready for something to come that way and be caught.' This must be 'enterprise' as understood by the Jewish tailor of the comic papers who stands in the doorway of his shop waiting for customers.

It seems that I was mistaken in supposing that the colonies of the kelep contain only from 20 to 110 workers, though these numbers were taken from Dr. Cook's own statement concerning the colonies introduced into Texas. We are now told that they (not the colonies in Texas!) comprise between 200 and 300 individuals and that 'there are seldom less than 100 and sometimes 400 or more.' Now even if we put the number at 500, these are still very small colonies, as ant colonies go, and show conclusively that the kelep, like other Ponerinæ, must be either short-lived or much less prolific than other ants, or both.

The adaptability of the kelep, according to Dr. Cook, is 'shown by its association with the cotton for the sake of its nectar, as well as by its skill in stinging the boll weevil.' If this shows anything it does not show adaptability but adaptation, which is a very different matter. The first part of Dr. Cook's statement, together with several of his previous statements, implies that the cotton plant and the kelep live in a state of symbiosis, like that which has been claimed to exist between the South American *Cecropia* tree and the ant *Azteca instabilis*, and between the African and tropical American acacias and the species of *Sima* and *Pseudomyrma* respectively. These classical cases, however, have never been demonstrated to the satisfaction of either the botanists or the myrmecologists. Any one who observes without bias the insects visiting many plants with extra-floral nectaries, like our species of *Cassia*, *Ricinus*, *Stillingia*, *Populus*, etc., will find that certainly in such cases no symbiosis exists. Not only do all sorts of ants, mutillids, bees, wasps, beetles, flies, etc., visit the extra-floral nectaries, but caterpillars, chrysomelid larvæ, etc., may be found feeding with impunity on the lacerated foliage of the plants thus 'pro-

TECTED.' It is possible, of course, that some of the cases of so-called ant and plant symbiosis may be genuine, but before any such statement can be made of a particular case like the cotton plant, we need much more concise, abundant and painstaking observations than have been published hitherto.

I fail to see, therefore, that Dr. Cook has produced any facts that could lead me to 'mitigate' the statements made in my former paper. The kelep is a typical ponerine ant, with all the disadvantages of a fixed and archaic constitution in the presence of experiments that require for their successful execution a plastic and adaptable species. When the kelep has succeeded in becoming a thriving component of the Texan ant fauna there will be time enough to determine whether its strenuous and enterprising efforts can 'add even ten per cent. to the cotton crop'—we will not expect it to chase all the boll weevils into the Gulf of Mexico. Dr. Cook himself admits that 'the chances are still very much against it, no doubt.' This is exactly what I have maintained. Neither I nor any one else blames the Department of Agriculture for following every clue till some 'concrete conclusion' is reached, but the premature and persistent booming of a conclusion which is far from being 'concrete' and has 'chances very much against it' can only discredit the Department of Agriculture, Dr. Cook and the unsuspecting kelep in the eyes of the general public, the Texan cotton grower and the scientist. I shall have no further remarks to make on the kelep and am satisfied to await patiently the concretion of the conclusions—even till the Greek calends.

WILLIAM MORTON WHEELER.

ARE THEY SYMPATHETIC DRUMS?

TO THE EDITOR OF SCIENCE: Some of the African xylophones (marimbas) and those of Central America, which negro slaves introduced there, have resonators—gourds, or cylinders of cane or of bamboo, placed beneath each sounding-bar. Often at the lower end the side of each resonator is pierced with a lateral hole and covered with a thin film or membrane. I have never found a reasonable ex-

planation why this construction was so often made. I had ascribed it to savage fetish, but is there not a better reason for it? I suspect that the film acts as a sympathetic drum, like that of the nyasataranga of India, the onion flute of Europe, and its late reproductions in the kazoo and zobo. In that case, it increases the volume of sound and adds a different timbre to the marimba, as it does to the other instruments mentioned. The same reasons may also be ascribed for the use of the membrane over a lateral hole of the Chinese flute (ti-tzū) and other flutes of the far east.

E. H. HAWLEY.

U. S. NATIONAL MUSEUM,
November 15, 1904.

QUOTATIONS.

SCIENCE IN THE BRITISH WEST INDIES.

THE American Consul at Bermuda describes in a United States Consular Report the steps which have been taken to establish there a biological station which will be to North America what the Naples station is to Europe. For several years American naturalists have carried on investigations of the natural history of the Bermudas and the surrounding sea, and have made efforts to establish a biological station in these islands. Upon the advice of the Royal Society, our government has given its assent to the project. The Colonial Government has expressed its willingness to purchase the land and erect the building, and grants toward equipment and support of tables have been made by the Royal Society and the Carnegie Institution. Harvard University and New York University, in connection with the Bermuda Natural History Society, have already commenced work in a temporary laboratory close to what will be the permanent quarters of the station, and the United States Government has been asked to give generous support to the station. America has already founded a tropical botanical laboratory in buildings of the government of Jamaica at Cinchona, and has now secured a biological station, so that it appears as if the Americans are rapidly getting the control of the scientific interests of our western tropical possessions. While we can not

but admire the interest shown in the establishment of these stations by universities and colleges in the United States, it is impossible not to regret the apathy with which our home and colonial governments regard such matters. Surely it is the duty of the state to encourage the pursuit and cultivation of natural knowledge throughout the Empire, and to realize the richness of its possessions in material for scientific study as well as in precious minerals. It is a reproach to our nation that a biological station has not been established by us in the Bermudas; for now, instead of American investigators carrying on their work in a British station, we have to face the fact that, though the station will be on British soil, it will belong to the United States, and our own countrymen will be guests in it. So far as the interests of science are concerned, probably this does not matter; for, as Mr. Balfour wrote a few days ago to the translator of his British Association address, community of aim 'binds together the scientific men throughout the world into one international brotherhood.' But it should be evident to some of our ministers, at least to Mr. Balfour, who has often expressed sympathy with scientific progress, that it can not be to the advantage of the state for another nation to accept responsibilities which belong to us. Mr. Balfour is gratified at the success of the translation of his address into German, but apparently he does not consider that the interest shown in scientific matters in Germany is due to the active and practical part played by the state in helping scientific education and research. What we want here and in all parts of the Empire is more practical help of the kind given by the United States and Germany to save us from the future regret of lost opportunities.—*Nature*.

ECONOMIC ENTOMOLOGY AT THE WORLD'S FAIR.

THERE prevails in Europe a very proper idea that the United States takes the lead in economic entomology. It must, therefore, have been somewhat surprising to our foreign friends, upon visiting St. Louis, to have found our station collections of insects so poorly