from the surface of the tube. When the lobsters were found to be resting quietly on the bottom of the dish, the point of the pipette was slowly lowered to the very bottom of the jar, where a few drops of clam juice were liberated in the vicinity of the fourth-stage lobsters. Within a few seconds all the lobsters in that region rose immediately to the surface of the water and swam wildly about for a variable length of time, after which they again went to the bottom of the jar. Here they either rested permanently or, if a sufficient amount of the clam juice remained near the bottom of the jar, apparently restimulated, the lobsters manifested further surface-swimming. These same tests were tried on the fifth-stage lobsters, but, although the clam juice might excite them to more active crawling over the bottom of the jar, it never produced surface-swimming, as in the case of the fourth-stage lobsters. These observations have received further support from the facts which the writer once learned from Dr. V. E. Emmel. It appeared in his case that the hungry lobsters with which he chanced to be working, when stimulated by a piece of clam meat dropped into their confinement bottles, would not remain on the bottom to enjoy the morsel, but would rise to the surface and manifest active swimming for some moments. These few observations demonstrate clearly that the lobsters, at least of a certain age, respond very definitely to certain kinds of food-stimuli. To what extent this kind of reaction may be responsible for the surface-swimming so characteristic of the early fourth-stage lobsters under natural conditions it is difficult to say. It is not improbable, however, that, after the fast which usually accompanies the approach of the third moulting-period the great hunger which characterizes the early fourth-stage lobster may be, in part, at least, the cause of the surface-swimming, although, as has been shown in previous publications, the reaction to light is also no doubt an influential factor.

PHILIP B. HADLEY

KINGSTON, R. I.,
January 22, 1912

SOCIETIES AND ACADEMIES

THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

THE 458th regular meeting of the society was held in the new National Museum at 4:45 P.M. on February 6. Professor Mitchell Carrell presented a paper entitled "The Excavations at Knossos or Labyrinth of Minos," illustrating his talk with the lantern.

ON February 20 the retiring president, Dr. J. W. Fewkes, made an address on "Great Stone Monuments in History and Geography," at eight o'clock in the new National Museum. Dr. Fewkes's paper will appear in full in the Smithsonian Miscellaneous Collections.

THE 459th regular meeting of the society was held in the new National Museum at 4:45 P.M. on March 12. Miss Densmore read a paper on the "Sun Dance of the Teton Sioux." This paper was based upon a study of the sun dance made among the Teton Sioux on the Standing Rock reservation in North Dakota and represents the sun dance usage in that band of the tribe. The study was conducted in a series of councils to which the old leaders of the tribe came from a radius of about a hundred miles. Fifteen reliable men were selected to give the account of the sun dance, their authority being established by interviews with about forty members of the tribe, in widely separated localities. Those who took part in the sun dance councils were men who bore upon their bodies the scars of their participation in the sun-dance tortures, and among them were the man who acted as intercessor in the ceremeny and the man who "did" the cutting of those who fulfilled vows, both men being the only Tetons living who had performed these official acts. The men comprising the sun-dance council, with the writer and an interpreter, visited the site of the last sun dance held by the Teton Sioux in 1882, the site being identified by the Indians. The place where the sun-dance pole was erected, the outline of the "shade-house" and the location of the "sacred place" were recognized and measurement showed them to be correct, according to the usual plot of the sun-dance grounds.

The sun dance was held annually by the Sioux and was distinctly a religious ceremony. The fulfilling of vows of torture was an important part of the ceremony, the vows having been made by men in danger on the warpath. When making the vow they asked

for a safe return and that they might find the members of their family alive and well, and the fulfillment of the vow was required whether the prayer was granted or denied.

The paper was illustrated by songs of the sun dance which had been recorded by the phonograph and were played on the piano. Many of these were ceremonial songs and known only to the man who sang them for the speaker. One of these men has died since the songs were recorded. A collection of old ceremonial articles used in the sun dance was also exhibited.

THE 460th regular meeting of the society was held April 10 at 4:45 P.M. in the new National Museum. The speaker of the afternoon was Professor Pittier, who delivered an address on "Notes on the Native Tribes of Panama," with all of whom he came in contact in the course of his travels.

There is much confusion current as to the number of the so-called tribes and the stocks to which they are related. The numerous names recorded correspond in fact not to distinct tribes, but merely to villages, names of chieftains, or, in a general way, to what the old Spanish chroniclers used to design as "parcialidades."

In the present time there are east of the Canal Zone only two distinct "nations," viz., the Cunas, or Cuna-Cuna, to which the San Blas Indians belong, and the Chocoes to the south, beyond the Tuyra River. The line that separates these two stocks is at the same time the ethnological boundary between South and Central America.

The Cunas are a very numerous and strong race, almost uniformly of short stature and broad shoulders. They are very jealous of their independence and shun all interference on the part of strangers, including the Panamanian government, the authority of which over them is only nominal. The Cunas of the northern coast, east of Nombre de Dios, or San Blas Indians, are far above the other Panamanian aborigines in their social and economic development; they constitute one of the best elements of the population included in the territory of the young republic, being thrifty and enterprising and having made of their extensive cocoanut palm plantations a real source of wealth. The remaining Cunas, known as Bayanos, Chucunacas and Payas, live in the interior and are less advanced, the two former groups being acknowledged as real "Indios bravos." All speak one language, with slight local variations.

The Panamanian Chocoes are but the northernmost branch of a numerous stock which extends more or less continuously along the Pacific coast of South America, from Punta Grachine in Darien, to the Ecuadorian boundary. In the Sambú Valley, where Professor Pittier found them, they are a happy lot, usually tall and well built, scantily clothed and living quite near to nature.

West of the Canal Zone, in the mountains of Veraguas and eastern Chiriqui, live the polygamous Guaymies, once under the care of the Spanish missionaries, but who have long since gone back to their own independent life and customs. They do not, however, avoid or repel the contact with the other natives, and owing to the rapid expansion of the neighboring populations, so-called civilized, the Guaymies are doomed to soon lose their characteristics and individuality as a race. Certain ethnological traits, as well as their physical appearance, point to a relationship with Costa Rican tribes.

In consequence of what Professor Pittier calls a "caprice of arbitration," the Republic of Panama has acquired the northern branch of the Térrabas or Tirúb of Costa Rica. These dwell in small and rapidly dwindling numbers at the headwaters of the Teraria or Tilorio, the main branch of the Changuinola River. They have been investigated by Pittier in the course of his survey of Costa Rica.

These four are the tribes represented to-day in Panama. The Dorasques, supposed by some to descend from the great Chiriqui pottery makers, seem to have disappeared, unless the Brunka of Costa Rica are really what is left of them.

With reference to the possible affinities of the Panamanian tribes with the neighboring stocks, the speaker took absolute exception to the theory of the Chibchan relationship, which he was one of the first to advocate about twenty years ago and which has since received general acceptation under the authority of Brinton, Deniker and others. The pretended relationship is founded merely on linguistic analogies and on the apparently common origin of quite a number of words. But these facts can be taken as conclusive only if supported by anthropological common characteristics and also by partial community of uses and customs. Physically, the Cunas are strikingly distinct from the Guaymies and the Costa Rican Indians, and both stocks offer none but general racial likeness with what is left of the original Chibchas.

In the opinion of Professor Pittier the origin of the Cuna-Cuna has to be looked for elsewhere than in the interior of Colombia, and the Guaymies, Valie' tes, Bribri, Térrabas, Sumos, etc., are more likely to be the remnants of a primitive autochthonous stock. Pittier's talk was illustrated by numerous lantern slides and the exhibition of the objects collected among the Chocoes and Guaymies.

TRUMAN MICHELSON,
Secretary

THE BOTANICAL SOCIETY OF WASHINGTON

THE 81st regular meeting was held at the Cosmos Club, May 7, 1912, at 8:00 P.M. President W. A. Orton presided. Twenty members were present.

The following papers were read:

Further Studies on the Pecan "Rust": F. V. RAND.

A preliminary report on the fungus causing this pecan leaf disease was published in *Phytopathology* for August, 1911, under the name *Mycosphærella convexula.* Since that time the fungus in question has been obtained from a number of other sources and several strains known to have originated from single two-celled ascospores have been under study. In the course of one and one half year's growth in culture, strains originally producing a majority of apparently two-celled ascospores have gradually changed, until now most of the ascospores are distinctly non-septate. Furthermore, a typical *Glœosporium* form was developed in culture and also obtained from the host. A large number of colonies known to have originated from single ascospores or single conidia all gave cultures producing both perithecial and conidial forms, showing the two to be different phases in the life cycle of the same fungus. Inoculations on Jonathan and Yellow Newton apples gave a decay similar to bitter-rot, with production of conidia and immature perithecia on the latter. Inoculations on young pecan leaves under greenhouse conditions gave negative results, but infections together with production of conidia and mature perithecia, readily occurred on living leaves in a damp chamber. From the studies summarized above it would appear that the fungus is closely related to if not identical with *Glomerella rufomaculans,* and that it is not a very active parasite on the pecan.

Distribution of Pigment in the Seed-coat of the Cowpea: Dr. ALBERT MANN.

Transverse sections of the seed-coat disclose three principal layers of cells: an outer palisade layer, a heavy-walled layer below this of empty cells, and a layer of considerably compressed cells with long axis parallel to the surface of the cowpea.

It was found that the colorations in the cowpea are the result of pigments deposited in two of these layers. In all colored cowpeas there is a basal color or practically uniform tint and invariably to be found in the lowest of the three layers, which the speaker terms the basal color layer. This is a melanin compound of an orange-yellow tint, grading into lemon-yellow and pale buff. All other colors are obtained by superposing upon this basal color layer various pigments, and these are uniformly deposited in the palisade cells, and as a rule in the lower and larger third of the cell cavity. Three colors are found here: black to blue-black, or sometimes purple tint, which is an anthocyanin, a yellow or brassy-brown pigment and an intense black pigment, the last two being melanin compounds. By various arrangements of these three superposed tints in the palisade cells, or by the absence of any pigments in these cells, the various schemes of coloration in the cowpea are obtained; the marbling, blotching, dotting, as well as the uniform colors of some cowpeas, being produced by the basal color plus such superposed arrangements of color in the palisade cells as are characteristic of the different varieties.

In the case of the few cowpeas having white or colorless seed-coats, the result is obtained by the suppression of all pigments both in the basal color layer and in the palisade layer.

A wild cowpea secured from North Nigeria, Africa, is of particular interest, in that upon the same cowpea all the elements of color, as well as all the schemes of coloration are to be found.

The Purpling Chromogen of the Hawaiian Bitter Yam: H. H. BARTLETT.

Illustrations of the Phytogeography of the North American Continent: Dr. JOHN W. HARSHBERGER (by invitation).

The speaker displayed to the society an album of twelve volumes of photographs and illustrations of North American vegetation, collected during the preparation of his recently published work on the phytogeography of North America. The source of the material and method of preparation and classification were discussed, and the general plan and scope of the work were explained in detail.

W. W. STOCKBERGER,
Corresponding Secretary