



Prof. J. F. Tristan 303
with the kind regards of
Philip P. Calvert

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WEEKLY REVIEW
OF THE
UNIVERSITY OF PENNSYLVANIA



ANDRE KORDOSKI

CLASS '07 C.E.

PHILADELPHIA, PA., DECEMBER 13, 1913.



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Among the places of general interest are: THE UNIVERSITY MUSEUM OF ARCHAEOLOGY, which contains valuable Babylonian, Egyptian, Egyptian and Mediterranean collections; and one of the most complete American and general ethnological collections; the FLOWER ARBORETUM, OBSERVATORY, on the West Chester Pike, which is fully equipped with modern telescopes and instruments; and the BOTANIC GARDENS and GREENHOUSES. These are all open to the public.

For General Information Address University Recorder.

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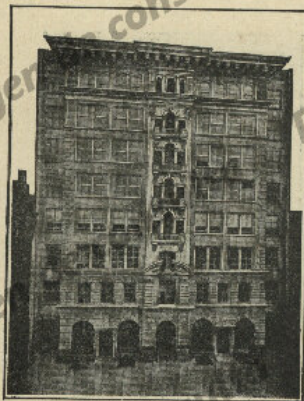
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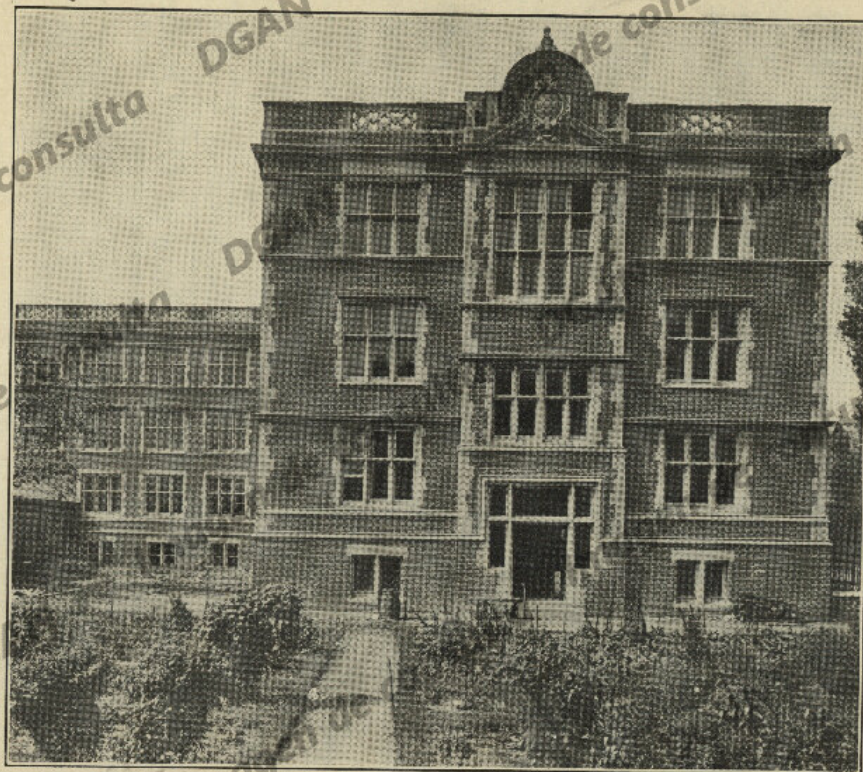
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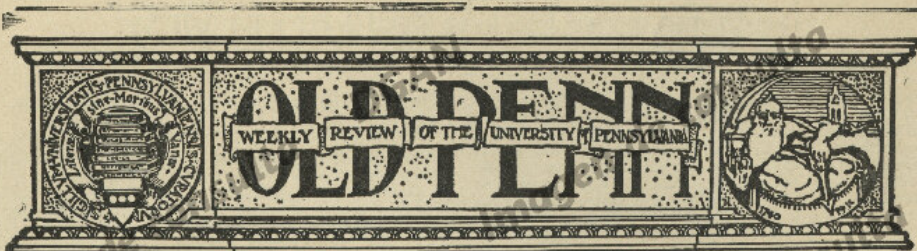
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THE ZOOLOGICAL LABORATORY, EASTERN ENTRANCE,



A NATURALIST IN COSTA RICA.

By Philip P. Calvert, Ph.D., Professor of Zoology.

Following is a brief abstract of a free public lecture by Professor Philip P. Calvert, of the Zoological Department, delivered in Houston Hall on Saturday, December 6, in the course of weekly lectures by members of the faculty. Dr. Calvert said, in part:

While great political and commercial interest in Central America has been aroused during the past twenty-five years due to the possibilities of inter-oceanic canals in Panama, Nicaragua or elsewhere, that part of the world has long had an equally great attraction for the biologist. Thomas Belt spent the period 1868-1872 there and, as a result, produced his "Naturalist in Nicaragua," of which Darwin wrote: "It appears to me the best of all natural history journals which have ever been published."

Belt lived and worked in comparatively low country, north of the suggested route for the Nicaraguan canal. To the south of that route, between it and the present Panama canal, rise the mountains of Costa Rica to an altitude of 12,000 feet. Here, by virtue of the great differences in elevation between sea coast and volcanic peak, the resulting differences in temperature and in rainfall, the proximity to the Equator, and the broken character of the surface of the country, thrive a flora and fauna unexcelled in richness and variety by those of any equal area of the earth's surface.

Into the tracts of virgin forest on the lowlands and on the mountain sides great incursions have already been made to obtain clearings for the cultivation of the banana or of coffee, or for pastures or for lumber itself. The lower lying tropical forests are composed of great trees of many different kinds commingled, while at higher elevations are groves of evergreen oaks. In damp open places, chiefly at lower levels, are the so-called wild plantains with inflorescences of flaming red or of golden yellow. The open pastures on hills of the moister Atlantic slopes, as at Turrialba, are clothed with bright green grasses, while in the valleys are brooks or rivers always noisy from the multitude of rocks and stones in the stream beds against which the swift-flowing current dashes. The trees are covered with parasitic and epiphytic plants of many different kinds, often confusing the eye with the variety of foliage. The candelabra-like cecropia trees are characteristic of tropical America. The railroad from Limon, the Atlantic port, to San Jose, the capital, follows in much of its course, the valley of the Reventazon River, whose canyon affords magnificent vistas of tropical verdure.

Among the epiphytic plants, the members of the

Bromelia family are especially interesting on account of the food and shelter which they afford to many kinds of animals and the inter-relations of these animals. Rain water is retained for long periods between the bases of the leaves and in it aquatic animals live and move and have their being. Larvae of a dragon fly found in this situation were successfully reared to the adult stage and thus the first chapter in the life history of the very long-bodied Mecistogasters, restricted to tropical America has been written. These dragon fly larvae feed upon mosquito larvae living in the same water; both sorts of larvae are cannibalistic and also devour other insects and small crustaceans which, as tenants or as occasional visitors come their way. In the drier parts of the Bromelias lives a caterpillar at the expense of the plant itself. Apterosigma ants cultivate a fungus which grows on the excrement of the caterpillar and parts of this fungus furnish nourishment to the cultivators. Other, larger and fiercer, Odontomachus ants rush to attack the naturalist when he investigates their bromelian home, spreading wide their toothed jaws and snapping them together with a click. Vegetable debris and even earth, perhaps from the feet of birds, gather between the bromelia leaves and earth worms find a congenial abode in the mixture. The bromelia-dwelling beetle Pachyteles has imitated the ants in so far as it has developed an antenna-cleaner on its front legs, consisting of a notch on the tibia lined with hairs through which the antenna may be drawn, and prevented from slipping by a conveniently placed spine on the femur.

The numerous streams of Costa Rica are frequently interrupted by waterfalls of varying height and these are often spots of the greatest attractiveness to the botanist and the zoologist. The Thaumato-neura dragon flies in all stages of their existence appear to be confined to certain waterfalls, fluttering about in the spray and laying their eggs in the roots and stems of plants which are constantly bathed by water. The larvae clamber over the rocks of the face of the fall and, attaining their fullness of growth, transform to the winged condition still within reach of the spray.

Near the Thaumato-neura waterfalls often hangs the "eye of the bull" (Mucuna), a vine which derives its popular name from the large round black seeds in its six-inch pods, pods and flowers before them hanging at the end of a separate stalk which may be several feet in length. There are unnumbered caterpillars and beetles of striking form and color. Such is the Harlequin beetle, two and a half or more

inches in length, with a gay coat of dark gray, pale pink and pale green, with antennae and front legs twice as long as its body, producing a clicking sound by rubbing two parts of its thorax on each other, and whose grub feeds upon the sugar cane. One such beetle whose portrait from life was shown, was itself the home of two species of mites and one of pseudoscorpions living beneath the wing covers. Another is the Hercules beetle, larger in size, the male with great horns on head and prothorax, which contentedly lived in confinement gnawing at sugar cane. Winged and unwinged walking sticks abound, the former flashing coral red organs of flight, a pale green wingless one clinging to vegetation like an insect sloth.

Relatives of the *Apterostigma* ants, but more advanced, are the leaf cutters, familiar to all who have visited tropical America, whose mound-covered nests were first shown by Belt to contain spaces wherein fungus is cultivated by the busy insects on the plant fragments which they laboriously collect. Almost equally well known are the *Pseudomyrma* ants, dwellers in the Bull's horn thorn, obtaining from the plant several kinds of nourishment and severely attacking, by both ends of their anatomy, the unfortunate who come in contact with the thorn.

The volcanoes of Costa Rica are round-topped, not to say flat-topped, and their slopes usually gradual. Some have been inactive for many years (like Irazu, 1723), others although in eruption more recently (Turrialba, 1866) display their power at long intervals, while Poas every few years sends forth a column of steam, water or ashes. The craters of Irazu are in part clothed with vegetation quite unsuggestive of their actual character. Poas possesses a deep-laid crater lake and is looked on as an elevated geyser.

Unlike Mexico, much of Costa Rica is in the hands of small landowners, a condition to which the peacefulness of the country is largely due. A Costa Rican farmhouse is not usually a pretentious place, but the hospitality of its owners makes its memory a very bright spot in the naturalist's recollections. The Pacific slope has a more definite dry season than the Atlantic and has been preferred as a dwelling place, both by the Indians and the Europeans. It is in some respects more accessible, yet large parts of it remain little known.

Until its destruction by earthquake on May 4, 1910, Cartago, near the top of the Atlantic slope, was becoming a resort for natives and foreigners on account of its elevation (4750 feet), its equable climate, its excellent water supply and sanitary arrangements. It lies in a valley bounded by mountains and given over to pasturage and the growing of coffee. It was the capital of the Spanish governors and of the early republic of Costa Rica. Yet it suffered from the eruption of Irazu in the early eighteenth century and from earthquakes in the nineteenth, and these physical causes are likely to check a development to which its environment otherwise entitles it.

Graduate Alumni Dinner.

The Graduate School Alumni Society will give a dinner in the Auditorium of Houston Hall on Friday evening, January 30. This dinner will be followed by an address by Professor Morris Jastrow on "Useful Versus Useless Knowledge."

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TRAVEL AND DISCOVERY IN PAUL'S TRACK.

By Sir William Mitchell Ramsay, D.C.L., Oxon.

The following article contains the fifth and final lecture of a series of five on "Travel and Discovery in Paul's Track," delivered upon the George Leib Harrison Foundation, at the University of Pennsylvania, in Houston Hall, October 13, 15, 16, 22 and 23, by Sir William Mitchell Ramsay.

Synopsis.

Lecture V, Thursday, October 23.—The census of Quirinius, Luke II, 2; the census system in the Roman Empire; discovery of its existence, connection with the Birth of Jesus.

Dr. Ramsay spoke as follows:

About twelve years ago I wrote, and not merely wrote, I actually published, a little book on this subject, and a criticism was offered in one journal published on this side of the Atlantic that it was far too big a book for so small a subject.

I believe that that journal had previously assumed as a fundamental point to start with that the whole passage with which my book was concerned was a series of misstatements from beginning to end.

Now the standard of trustworthiness of any historian must be gauged by individual statements, and if you find any passage in a historian which right through shows a defective historical sense, shows the power of mistaking falsehood for truth, you must regard that historian as being on the whole a person unlikely to be able to write a book which possesses historical credibility. If part of his book is incredible, you cannot attach any belief to the rest of his book. You do not find in this world that a person is quite wrong in some one matter concerning his own subject, but right in all the rest.

A historian possesses, or ought to possess, the power of distinguishing between truth and falsehood, which enables him to avoid falling into gross error or misstatements or, still worse, invention in any part of his work, and if we can give any serious reason for thinking that a historian has been guilty of invention without proper authority in any single statement, you discredit the character of that historian as a whole.

Now when you find that a historian has been not merely criticised, but has been condemned for having written a series of statements in a short passage, all of which are false, impossible, absurd and wrong, you necessarily come to the conclusion that that person is a mere pretender to the name of historian, that he is defective in the historical sense, and you attach a very low value to the rest of his statements in the other parts of his book where you cannot gauge him by definite external evidence as you can in the part where you have succeeded in condemning him.

Now that is the case in the passage which I wish to bring before your notice, and I should like to mention first of all to you, very personally, the way in which I was led into this discussion, which is not properly a part of the historical investigation on which I have been engaged.

My duty, my business in life, which was marked out for me by others in the end of the year 1879, was to investigate the art, the antiquities, the geography and the history of Asia Minor. In this particular discussion I have been led into a different department of historical study, and I should like to explain