MR. L. A. BORRADAILE, M.A., of Selwyn College, has been appointed university lecturer in zoology at Cambridge University.

DISCUSSION AND CORRESPONDENCE

COTTON ANTHRACNOSE

SINCE Dr. Atkinson's work on cotton anthracnose, 1890–3, little has been done on this now important disease. Recent work here has brought out some very interesting points which in a way confirm some of Dr. Atkinson's theories in connection with the infection of seed and seedlings. Last winter while working with seed taken from a field where the disease occurred the previous summer, I found anthracnose occurring in a number of germination tests. This led me to search for the fungus in the tissue of the seed. I found that by taking bolls which were slightly diseased and mature it was an easy matter to find the fungus filaments beneath the seed coats and in the tissues of the cotyledons. The spores of the fungus are also readily found between the seed coats and the cotyledons of mature seed. Numerous inoculation experiments during the past summer show that the fungus seems to prefer the seed and lint to other portions of the plant. In fact, in some cases the attack is confined to these parts, there being no sign of the disease on the walls of the bolls. In some cases where the bolls mature and the cotton opens out with no sign of disease other than slight discoloration of the lint, the fungus will be found on such lint and in the seed. Such seed, of course, when planted produce diseased seedlings and thus spread the disease. This season numerous outbreaks of anthracnose in various sections of this state have been traced to diseased seed. Some of these occurred where cotton had never been planted before. From an economic standpoint this phase of the problem seems to be very important. The south is now sustaining a loss of millions of dollars annually from anthracnose. It has been estimated that the state of Georgia loses over $14,000,000 annually and a very conservative estimate of the loss of South Carolina would be from $400,000 to $500,000 annually.

Since the twentieth of last July I have been unable to isolate the fungus from the fields where cotton was planted last year. From this it seems that a one year's rotation with disease-free seed might eliminate the disease.

Interesting results have also been obtained in reference to seed treatment, method of infection of the bolls, resistance of different varieties of cotton, breeding resistant strains, etc., all of which will be published at an early date in report of the South Carolina Experiment Station.

H. W. BARRE,
Botanist
SOUTH CAROLINA EXPERIMENT STATION
October 26, 1909

METAPHYSICS AND MENDELISM

There are reasons for regarding man as a chimpanzee on which an additional element, "manness," has been superposed. There you have man expressed or explained in terms of his anthropoid ancestor. The characters of a frog are undoubtedly latent in the frog's tadpole. What is to hinder, therefore, expressing or explaining the frog in terms of the tadpole by saying the tadpole carries the characters of the frog? The logic is sound in the statement that the tadpole contains frog factors or "frogness." The question is merely as to the helpfulness of sound logic used that way.[1]

The helpfulness of sound logic, aside from its use as a mental discipline, is usually based on its relevance to the matter under discussion. As regards the chimpanzee we shall doubtless all agree with the learned Californian if he will advance scientific proof that in homo-simian hybrids "chimpanzeeness" and "manness" behave toward each other in Mendelian ratio; for it is Mendelian inheritance, it must be remembered, that the English scientists are talking about. If the tadpole contained the potentiality of developing either into a frog or, let us say, a salamander, according to circumstances under experimental control, we might consider "frogness" as a factor, the presence or absence of which would have a determinative influence in development.

[1] "The Hypothesis of 'Presence and Absence' in Mendelian Inheritance," W. E. Ritter, SCIENCE, September 17, 1909.

In other words, the allusions to the frog and chimpanzee, true or otherwise, are not particularly illuminating in a discussion of Mendelism because there is involved no feature of dominance nor alternation of characters.

In Mr. Punnett's original statement of what is known as the Cuénot theory:[2]

> There are but two relations into which the unsplittable unit character can enter with the individual. It may be present or it may be absent and no third relation can be conceived. From this we are led to ask whether the hypothesis can be brought into any simple relation with the phenomenon of dominance. Is dominance the outcome of the presence of the given factor, and recessiveness the condition implied by its absence? At present we can only say that such a point of view is not at variance with the great majority of cases hitherto worked out. Whether the few instances which now seem contradictory will ultimately fall into line, future work alone can decide.

Nothing very cryptic or very dogmatic about that. In speaking of "roseness," "peaness," etc., Mr. Punnett has merely framed a convenient and probably temporary handle to grasp a difficult subject in order the better to inspect it. We owe him a vote of thanks, that, instead of christening his conceptions with newly coined words dug from the dusty depths of the Greek lexicon, he has rather chosen to emphasize their temporary character by Englishing them, lest others should read into his statements a concreteness he manifestly wishes to avoid.

The writer is of those who believe that the dangerous facility with which the facts of Mendelism fall into categories and A-B-C notations is illusory and that the matter is more complicated than those would have us think who have allowed themselves to be entangled in all-explaining formulæ. Yet working hypotheses we must have in order to advance, and none suggested so far is any more usable, certainly none more lucid, than the one Professor Ritter finds so contaminated with metaphysics.

J. F. ABBOTT

ST. LOUIS, MO.,
September 29, 1909

[2] R. C. Punnett, "Mendelism," 1907.

HYDROGEN POLYSULPHIDE AS A REDUCING AGENT

I SHOULD like to correct a clerical error in the account I gave a few months ago[1] of my investigation of the reducing action of hydrogen polysulphide. The statement "it may be used at the ordinary temperature, dissolved in ionizing solvents, such as water or alcohol, or in non-ionizing media, such as carbon bisulphide" should read "it may be used at the ordinary temperature, *for the reduction of substances* dissolved in, etc."

As is well known, the polysulphide is practically insoluble in water and alcohol.

ALFRED TINGLE

LABORATORY OF THE IMPERIAL CHINESE
PEI YANG MINT, TIENTSIN,
October 10, 1909

[1] SCIENCE, XXX., 158 (July 30, 1909).

SCIENTIFIC BOOKS

Landmarks of Botanical History. By EDWARD LEE GREENE. Smithsonian Miscellaneous Collections (Vol. 54), 1909.

We have had many histories of botany, each of which has added somewhat to our knowledge of the growth of the science and of the men who have been its chief workers, or they have given us a new point of view so that we have been able to see how botany has grown and developed from its crude beginnings to the present. In Dr. Greene's book we have another attempt to set forth the matter in a new light, and at the outset it may be said that few men could bring to the task better ability, training and preparation. Nor are there many men who can command equal library facilities, for Dr. Greene's unrivaled private library of the earlier botanical works is supplemented by the Congressional Library, to which as an attaché of the Smithsonian Institution he has had the freest access. This happy coincidence with the unusual freedom from official duties afforded by his position, and a persevering industry, have conspired to favor the production of a monumental work.

In choosing for his title the word "landmarks" the author indicated something as to