

cotton—in the first dozen pages of the book—that the systematic botany of cotton had some definite meaning. Nor did I think that any reviewer would be so ruthless as to drag my little jest (about scientific names appearing to be “merely useless duplicates of easier names”) out of its context to pelt me.

W. LAWRENCE BALLS.

Little Shelford, Cambridge, September 16.

MR. LAWRENCE BALLS'S objections to my review of his book, “The Development and Properties of Raw Cotton,” which appeared in NATURE of August 26, call for a reply from me.

I feel quite sure Mr. Balls need have no fear that my remarks will be viewed, by even the most casual reader, as the criticisms of a work that had attempted to deal with the systematic botany of *Gossypium*. But Mr. Balls's anxiety that that great sin should not be attributed to him, exposes himself to the charge of deliberate disregard for both the methods and results of the systematist. It is a fact that I specially devoted a considerable part of my remarks to what I regard as the weak side of Mr. Balls's book, and I repeat it is a very weak side, which, though contained in one chapter mainly, dominates his entire studies of the cotton plant. But with equal deliberation, however, I recognised and even extolled the meritorious features of the book, which are undoubtedly very great.

The implication that I read only certain portions of Mr. Balls's book is quite uncalled for. As a matter of fact, I read every word. It was only because I appreciated and even admired the book that I felt it incumbent to express my mind unhesitatingly. It was in no spirit of carping that I gave special attention to its shortcomings. The issue at stake is very great indeed; namely, the development of the cotton staple, a problem of Imperial interest in the agriculture and industry of our Empire. I cannot help repeating, therefore, that for Mr. Balls to attempt to justify Mendelian cross-breeding of undetermined stocks (and even pedigree selection of such stocks) of *Gossypium* is not only a blemish but a serious blunder, both in his book and his work. With culture experiments accuracy, in the starting point (more especially with stocks that of necessity involve several species and numerous varieties and races), is more essential than even care in subsequent treatment. We have heard far too much of the assumption that successful stocks can be produced in the laboratory or the experimental plot, in utter disregard of systematic botany.

The sneer that has been thereby cast on herbaria work is uncalled for, and merits the severest condemnation. Such an attitude may enlist the sympathy of the ignorant, but can secure no advancement in the object in view. The question of the future supply of cotton to the British looms is too serious a matter to justify any half-measures. The history of cotton is full of fads and fancies. Extravagant and wasteful experiments have taken the place of rational development. We have failed because we have not followed nature with sufficient closeness. We require the earnest endeavours of the experimental physiologist to be combined in the closest association with the most extended and searching investigations of the systematist. Either alone must of necessity be useless.

Mr. Lawrence Balls informs us that his description of “*Gossypia*” as a sub-order (instead of a tribe) had been taken from “an accepted authority on systematy.” He might have favoured us with the name of the author in question. I have searched through a fairly extensive botanical library and failed to discover the authority to whom he may be alluding.

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Bentham and Hooker, in their “*Genera Plantarum*,” place *Gossypium* in the tribe *Hibisceæ* (which Mr. Balls renders as *Hibisceæ*), but they make no mention of a sub-order “*Gossypia*” (? *Gossypæ*). These are no doubt trivial criticisms and are made only in the spirit of “Hindu” and “Hindi.” But admitting the “accepted authority on systematy,” is there any advantage in setting on one side the universally accepted authorities on British botany?

I am afraid Mr. Lawrence Balls simply tries to obscure the main issue, raised in my review, by citing an example of careless orthography; the “Hindu” and “Hindi-weed” already mentioned. Is it necessary to explain that the word “Hindu” denotes the people or the religion, while “Hindi” and “Hindustani” indicate the languages of certain portions of India? These are their most general acceptations, but neither could, strictly speaking, be used as the name of a plant, more especially when that plant never could have come from India. The person who first used that name, in its Egyptian signification, was very possibly a follower of the school that seems to hold the view that accuracy in systematic botany was an unpardonable offence. De Candolle, long years ago, told us that the aim of science was not to make names, but to use names to distinguish plants. Does “Hindi-weed” isolate a certain cotton plant from all others? If it does not, it is a vulgar name that should find no place in a scientific publication.

Sir George Watt's “*Wild and Cultivated Cotton Plants of the World*” (to which Mr. Balls refers us) mentions Hindi-weed as being possibly a recessive hybrid of the *Moqui* of Arizona, or perhaps rather of the *N'dargua* cotton of Senegal. It is not advanced as a name that can be accepted as distinguishing a definite plant. But Mr. Balls himself is quoted by Sir George (*loc. cit.*, p. 182) as holding that Hindi-weed “hybridises with the others and the Mendelian splitting forms from the cross are very common, and also go under the name of ‘Hindi,’ though they are usually very tall, up to three metres. ‘Hindi’ itself is about one metre high, and except in its seed reminds me of American Uplands.” We are thus told, by an advocate of non-systematic studies, that “Hindi-weed” may assume numerous forms and conditions until a certain example of it might have to be spoken of as not being Hindi-weed. Thus that vulgar Egyptian name is by no means as “definite as any other,” though Mr. Balls in another passage assures us that it is. It is a loose, popular name that could never be taken seriously as the name of a cotton plant. The issue raised by Mr. Balls as to the Hindi-weed having a naked seed, while he seems to affirm that Sir George Watt “during the primary division of the genus” places it with fuzzy-seeded forms (a passage I have failed to discover) is, however, outside the scope of a review of Mr. Balls's book.

Lastly, I admit that Mr. Balls's jest of scientific names being merely useless duplicates of easier names was not only feeble (as he now admits it to have been) but highly misleading and utterly out of place.

THE REVIEWER.

THE KARAKORAM EXPEDITION.

THE account of Cav. Dr. F. de Filippi's expedition of 1914-15 to the eastern portion of the Karakoram range, briefly noticed in NATURE of August 5, has now been published in the *Geographical Journal* (vol. xlvi., No. 2), with a selection from the beautiful photographs taken by Capt. Antilli, to whom this part of the varied and

important work undertaken by the expedition was entrusted, together with a report of the interesting discussion which followed the reading of the paper. By the kind permission of the Royal Geographical Society we are now enabled to reproduce two of the views exhibited at the meeting on June 14, illustrating the characters and surroundings of the Remo glacier, which in some respects appears to resemble the great ice streams of the Arctic regions rather than those of the usual Himalayan type.

In general the Himalayan glacier, like that of the Alps, is confined to a single drainage system, and is separated from its neighbours by an ice-

pared with its breadth, no doubt account for its immaculate appearance, so vividly described in the paper (Fig. 2).

The difference in aspect between the surroundings of the Remo glacier and those of the glaciers further west and in Sikkim, a point raised by the President at the close of the discussion, is perhaps to be explained in part by the geological structure of the district. The line of division between the crystalline rocks constituting the main axis of the Himalaya and the softer slates, shales, and limestones of Palæozoic and Mesozoic age which succeed them on the north, is shown on Lydekker's geological map of Kashmir



FIG. 1.—Sources of the River Yarkand. From the *Geographical Journal*, August.

free ridge. But here we see the Remo not only spilling over the saddles which surround its upper basin, into the valley of the neighbouring Siachen glacier, but actually sending a tongue across the main watershed dividing the Indus drainage from that of Central Asia (Fig. 1). Again, the fact noticed by Dr. de Filippi, that the front of the Remo glacier is almost free from moraine matter, is without parallel among the larger glaciers of the Himalaya, where one may often clamber for miles beyond the snout over heaped-up masses of débris, and scarcely detect a vestige of the ice beneath. The moderate dimensions of the mountains that rise above the Remo glacier, as com-

(Memoirs, Geological Survey of India, vol. xxii.) as passing diagonally across the Karakoram range to the west of the Siachen glacier; and in the last note made by Stoliczka, two days before his death, he records the presence at the Karakoram pass of shales and limestones of Triassic and Liassic age. Thus the material from which the magnificent pinnacles of the western Karakoram, or the precipices of Kinchinjunga, have been carved out is lacking in the eastern extension of the range. Moreover, the absence of a deep gorge in close proximity to the crest of the range, like that of the Indus further west, or of the Tista in Sikkim, lessens the transporting power of the tributary

torrents, and causes the hills to become smothered in a mantle of their own débris, so that, as Stoliczka remarks, "it becomes almost an exception to observe a rock *in situ*," and the scenery becomes correspondingly tame.

The occasion of the reading of Dr. de Filippi's paper was memorable in more respects than one. Not only was an opportunity afforded, and happily utilised by the President of the Society, of expressing the cordiality of our relations with Italy, whether we are engaged together in peaceful exploration or in the more serious business of war, but also by the participation in the discussion of the father of Himalayan exploration in that

observations of Dixon and Wigham¹ at Dublin, however, did not seem very promising: 100 seeds of cress (*Lepidium sativum*) were uniformly distributed over an even surface of moist quartz sand, and after germination had taken place a sealed tube containing 5 mgms. of radium bromide was set 1 cm. above the central seed. The seedlings grew up, but without any curvature indicating positive or negative "radiotropism," and the only noticeable effect was a slight depression of growth in those within 1 cm. radius of the tube. As stronger preparations of radium became available more definite retardations and inhibitions were observed: thus Gager, in an elaborate

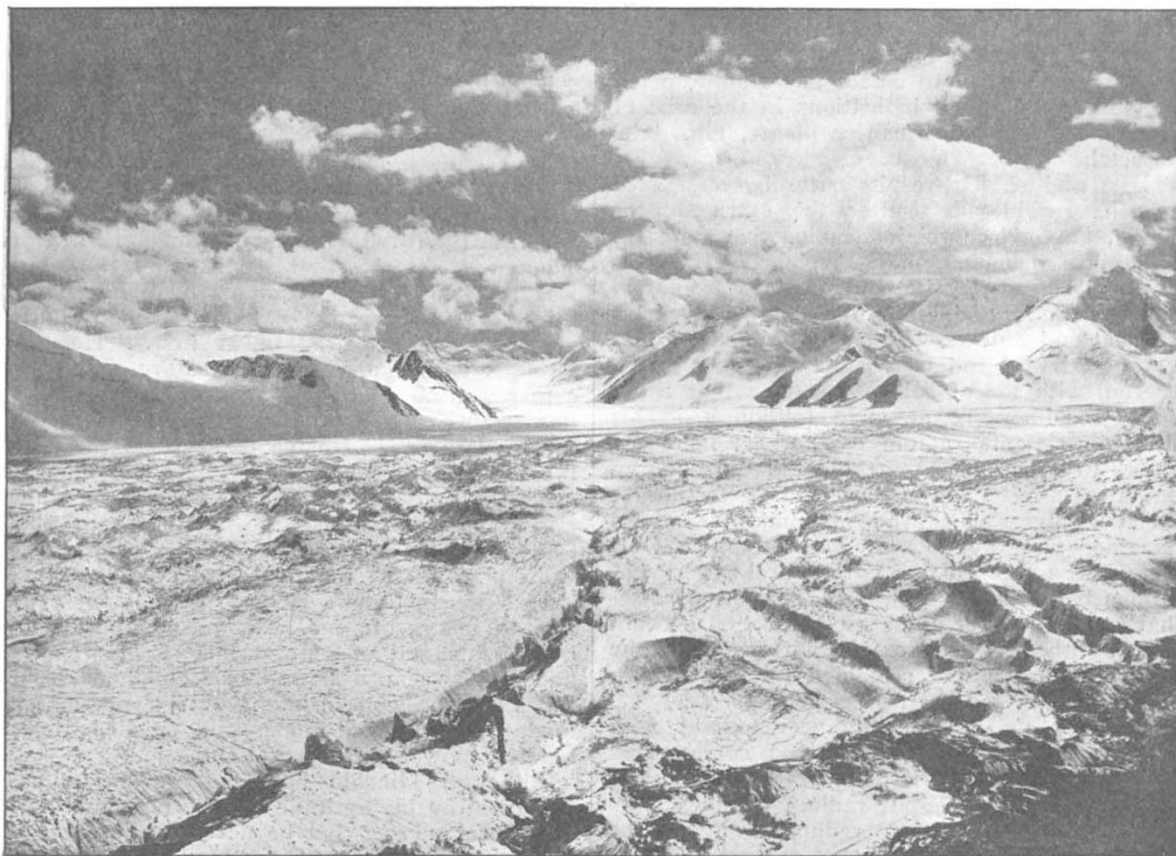


FIG. 2.—Middle portion of Remo Glacier, Northern Branch. From the *Geographical Journal*, August.

region, Col. Godwin-Austen, and of another pioneer in Central Asian discovery, Sir F. Younghusband.
T. H. D. L.

THE EFFECT OF RADIUM ON THE GROWTH OF PLANTS.

AMONG the many remarkable properties of radium it was perhaps natural to expect that it might have some definite effect on plants, and even, under suitable conditions, cause sufficient increase in the amount of growth to justify its use in horticulture and agriculture. The early

report,² noted a more or less complete inhibition in cell activities in younger and especially embryonic tissues, with few exceptions. The action of radium through the soil, however, was different; germination and growth were both accelerated, and the plants furthest away were stimulated most. Acqua³ found that different plants, and even different organs of the same plant, were differently affected, the root system in general responding more markedly than the aerial parts,

¹ Proc. Roy. Soc. Dublin, 1904, x., 178-192.

² Mem. New York Bot. Gard., 1908.

³ Ann. Bot. (Rome), 1910, viii., 223-238.