

measurements of lengths of lines, may I suggest that such measurements should always be made in centimetres? A handy steel rule, six inches long, graduated both in inches and tenths, and in centimetres and millimetres, can be bought for a few pence, and is easily carried in that almost omnivorous receptacle—the pocket of a schoolboy. The use of such a rule would beget familiarity with the metric scale, in itself an advantage for any boy whose education includes some knowledge of elementary physics. But more—the schools of the country would soon be sending out each year a body of educated men acquainted more or less with the advantages of the metric system, and their influence can scarcely fail to be helpful in hastening the general adoption of the metric system—a change so much to be desired both in education and in practical life.

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JOHN S. YEO.

Electrification of Glass.

REFERENCE is commonly made, in text-books of electricity, to the uncertainty of kind of the electrification produced on glass when it is rubbed with fur or flannel, opposite results being obtained with different specimens.

The following is a variation which I have not seen mentioned. A strong positive charge may be given to a smooth rod of soda-glass, by rubbing it gently with a certain piece of fur. Vigorous rubbing, on the other hand, produces an equally good negative electrification. Thus the two sorts may be produced in quantity at one stroke, by making the friction small at first and finishing with a vigorous pull. The half-way region of zero electrification may be displaced at will.

A piece of lead glass seems to be always positively electrified by this particular piece of fur.

F. HODSON.

North Eastern County School, Barnard Castle, January 28.

THE DANGEROUS SIDE OF INDIA.¹

AT the present time much interest attaches to the North-West Frontier of India, and to Afghanistan, the Beluch country and the Persian Gulf. Sir Thomas Holdich's book, therefore, is opportune as well as of remarkable value. It must be carefully studied by everyone desirous of forming an intelligent opinion about our Indian frontier policy. The politician, the military expert, the dilettante student, the thoughtful citizen of the Empire, all will gain much from its well-written pages. Moreover, although the chief and permanent value of this admirable work is topographical, the general reader merely in search of mental enjoyment will find a peculiar pleasure in the vivid descriptions of stirring incident and picturesque countries. The style is always easy and graceful, while it rises frequently to singular eloquence and poetry. Rarely are sound knowledge and expert opinions offered to the public in a form at once so simple and attractive.

A cultured survey officer of the Indian Service has clearly very enviable opportunities for varied experiences; but it requires a quiet observant mind, sanitary with humour, to vitalise scenes and peoples as they appear in this record of twenty years' work on the restless Indian frontier. Of the various districts and wild folk shown to us, some are more especially in one's thoughts at the present moment. The political temperature of parts of the Punjab frontier is just now simmering or even ebullient. In Swat there is the outward aspect of peace without cheerfulness. How much this is due to the dominance of our big battalions in that historic valley and how much it is due to the vast number of strong fighting men, fierce of heart and light of foot, who were killed there during the 1897-98 uprising it is hard to decide. No one, however, seems to assert that the people like our presence among them. When the sullen youths shall be grown enough to strike another blow for Islam, we may expect more trouble in that

¹ "The Indian Borderland, 1880-1900." By Colonel Sir T. Hungerford Holdich, K.C.I.E., C.B., F.S.A., late of the Indian Survey Department. Pp. xii + 397. (London: Methuen and Co., 1901.)

sickly district, especially if the garrison is diminished. The less fanatical Orakzais and Afridis sit complacent, but watchful. Satisfied with their last display of fighting prowess, they are ready, on the instant, to rush to the rally if their freedom of rascality is threatened or their subsidies are reduced. Further south, in Waziristan, we have gone back to the old plan, the ancient way, of surprise and counter raid, the burning of homestead and tower. Also in the organisation of the new frontier province, of which so much has been written, Lord Curzon has reverted to more primitive methods. Complex forms of administration have been replaced by a rougher, not necessarily less efficient system. The mere lawyer and the pleader are beggared in importance, and the "political officer," raised aloft in power, is to be mantled with responsibility. It is admittedly a putting back of the clock. Curious, not always friendly, eyes watch the experiment. Its success mainly depends upon the attractions dangled before the eyes of able officials to draw them from easier days, and domestic joys, to rugged solitary work in desolate places. Beluchistan is placid and peaceful. It is the more primitive type of frontier management. To this simple pattern the new frontier province is to be retrograded by the forcible suppression of many functions and recent developments, which until now were gloried in as triumphs of British rule in India. But not only are the political and ethnological conditions of Beluchistan and the new frontier province dissimilar, but a Sir Robert Sandeman is not the product of every day.

Then behind all these borderland experiments stands dubious Afghanistan watching curiously its new Amir, full of conjecture, moreover, about the refugee pretender in the hands of the Russians, and that other refugee pretender, the honoured guest of the British at Rawalpindi. It is no easy task to rule the turbulent, faithless Afghan tribes, and the peaceful succession of the present ruler of Kabul may be followed at any moment by some wild upheaval of ambition or of revenge on the son for the savage repressions of his father. Herat, and the Russians peering wistfully at that coveted if somewhat corroded "Key of India," must always be of anxious interest to all students of the Afghan frontier and to all lovers of peace.

To understand the real value to India of all these differing countries, and to estimate accurately their relative importance, a thorough comprehension of Sir Thomas Holdich's facts and geographical opinions is an essential precedent condition. He has something important to say on all the pressing questions concerning the north-west limits of India, some solid physical basis to disclose or to explain, ignorance of which must make reasonable conclusions impossible. That strange diplomatic instrument the "Durand" treaty has a chapter to itself. Surely no more curious or less sincere arrangement was ever concluded between the Government of India and an adjoining Power. By it a definite frontier line has been laid down and actually demarcated. On one side of this line the Amir is to maintain order and never again to throw covetous glances beyond the boundary pillars which define its course. We, on our part, accept responsibility for all the independent tribes which intervene between the pillars and our Punjab territory. The Amir can fulfil his promises, while obviously we can only keep to our agreement by first subjugating this wild mountain land. Misdemeanours against Afghanistan by the tribes nominally under our responsibility, but actually uncontrolled by us, can only be punished by the Amir sending raiding parties into the very country he has promised not to enter. We have to wink at these flagrant violations of a solemn treaty because we ourselves never had any intention of obeying its terms.

Such loose acceptances of frontier responsibility are,

in a political sense, immoral as well as practically mischievous. Already terrible evils have followed. The independent tribes, on our side of the limit, believe that in 1893 we annexed their hills, and only now refrain from a military occupation because of the martial prowess of the clansmen. All the frontier wars and the exacerbation of fanaticism all along the line since 1893 are traceable directly or indirectly to this unlucky treaty. Implacable suspicion and armed watchfulness on the part of the highlanders, as well as those violent outbreaks which have cost us so dearly, are part of the

beauty. This makes his book, not only the most important publication of the time on the Indian frontier, but also the most agreeable to read. The illustrations are excellent, the map trustworthy and very useful.

REPORT OF THE INDIAN PLAGUE COMMISSION.

THIS report, consisting of five big volumes, is a record of the work of the Commission appointed by the Governor-General in Council, with the approval of the Secretary of State for India. The questions submitted to the Commission were four: (1) the origin of the different outbreaks of plague (in India); (2) the manner in which the disease is communicated; (3) the effects of curative serum; and (4) the effects of preventive inoculation. The Commission, with Prof. Fraser, F.R.S., as president, has collected in seventy meetings in different parts of India and in two additional meetings after their return in London, the stupendous amount of evidence embodied in three closely-printed large volumes in twenty-seven thousand questions and answers.

The summary of the conclusions arrived at by the Commission, after having examined a host of competent witnesses and after having carried out itself or directed a considerable amount of work concerning plague, is contained in vol. v. on more than 500 folio pages. From this it will be understood that the work of the Commission was carried out in a thorough manner. Add to this the fact that the Commission had prepared a large amount of work in the form of charts, tables, statistical summaries, &c., and that after repeated and lengthy discussions amongst themselves the commissioners remained divided on several important points. We mention this to prepare the reader of the report for the surprise of not finding specific answers to the specific questions put to the Commission. This surprise is to a certain extent justified if we remember that various foreign commissions—Russian, German, Austrian, French—who have been sent out to India or Oporto respectively to study plague have in their reports given their Governments to understand that they have satisfactorily solved all and every problem concerning every point of the disease plague.

One has only to look through vol. v. of the report to feel convinced that the Commission has striven assiduously to find the specific answers; every page of this volume testifies to the desire to arrive at the correct conclusion; every assertion of fact brought before it was judicially and critically examined, compared and adjusted to its proper place and bearing. There can be, therefore, no question as to the thoroughness of the work itself. The cause of the deficiency of the answers must be sought elsewhere. In looking at the evidence of the witnesses and at the observations of

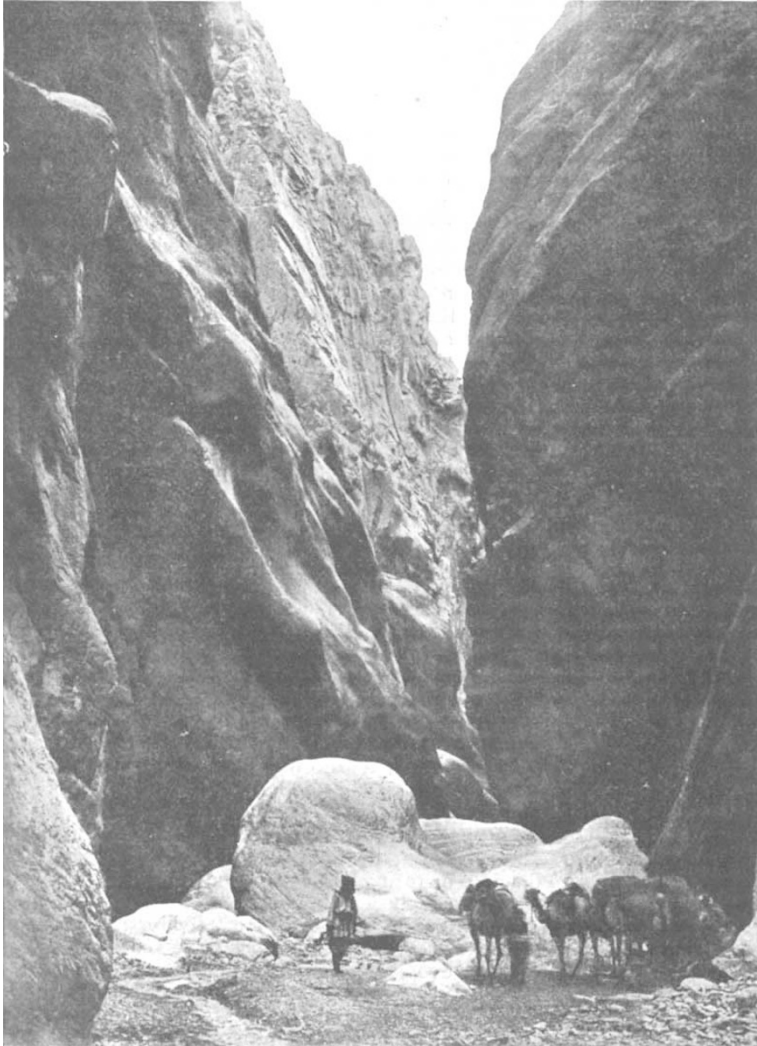


FIG. 1.—The road to the Takht-i-Suliman.
(From "The Indian Borderland, 1880-1900.")

price which we have already paid for a false policy, not justified even by the seeming expediency of a critical time.

Of Makran, the Persian Gulf, and that place of contention, Koweit, Sir Thomas Holdich has very pleasant and instructive pages. Quite apart from the "professional" value of his judgments and his historical summaries, there is a graphic power in his descriptions which stamps the strange scenes deeply in the mind. Here, as in all his other wanderings, this genial, able Royal Engineer officer displays his love of nature's