

cholera); and inoculation with them or their toxins inures the individual so treated to resist the attacks of micro-organisms of the same species and of the normal degree of virulence. One way of attenuating or rendering less virulent the toxins is to inject them into an animal that does not easily perish of them (*e.g.* horse, as regards diphtheria), when they undergo partial intracellular digestion within his tissues. His blood serum then contains altered toxins (the so-called anti-toxins), experience of which inures the cells of an animal of a more susceptible species (*e.g.* man) to resist the attack of virulent micro-organisms with unaltered toxins. It is noteworthy that when toxins and anti-toxins are mixed the latter may inure the cells to the former before death occurs, for the reason that these do not under normal conditions cause immediate death. For this reason animals are able to withstand much more than a fatal dose of a toxin when it is mixed with the appropriate anti-toxin, and sometimes even to recover from a disease which would otherwise be fatal if during the course of it the anti-toxin is injected. But toxins and anti-toxins are not retained within the system. They are digested by the cells and excreted, and therefore enduring immunity is not conferred by their presence, but by the fact (in some diseases at least) that when the cells are once inured they remain so.

It is clear that the serum treatment can be useful only in diseases against which immunity may be acquired, if only for a short time. In other diseases (*e.g.* tuberculosis, malaria, leprosy) against which immunity cannot be acquired, which do not run a pretty definite course of limited duration, of which one attack does not protect against subsequent attacks, it is useless; for here training does not benefit the cells, or if in some cases it does benefit them, this benefit is of such limited duration as to be practically useless.

After this, from want of space, very dogmatic statement of the rationale of serum-therapeutics, let us inquire what may be hoped for from the ceremony of blood-brotherhood in its medical aspects. Clearly nothing. It will not, of course, endow the traveller with his blood-brother's powers of resisting hardship (heat, cold, hunger, &c.); it will not confer immunity or increased powers of resistance against that class (the most death-dealing class) of diseases against which immunity *cannot* be acquired; and lastly, it will not confer immunity or increased powers of resistance against that class of diseases against which immunity *can* be acquired, unless there is present in the blood-brother this or that micro-organism in an attenuated form, or unless antitoxins are present in him to an inconceivable degree of concentration—very remote possibilities, or rather impossibilities, on which the traveller were wise not to count. On the other hand the blood-brother may communicate actual virulent disease, for instance syphilis and malaria.

G. ARCHDALL REID.

Remarkable Sounds.

IN a Japanese work, "Hokuetsu Kidan," by Tachibana no Mochiyo (published *circa* 1800, tom. ii., fol. 5, *seqq.*), I have found some remarkable sounds described. Among the details given therein of the "Seven Marvels of the Province of Echigo," we read: "The fifth marvel, the Dônari [literally *Body Sounds*, or *Temple Sounds*], is a noise certain to be heard in the autumnal days, just before a fine weather turns to stormy, it being sounded as if the thunder falls from the cloud, or the snow slides down a mountain. Where it originates is quite uncertain, as there are in the counties several mountains assigned therefor. The sounds are heard of same intensity in variously distant places." Further, the author recites a folk-tale current in his time among the villagers of Kurotori, in Co. Kambara, which attributes these sounds to the head and body of a hero, Kurotori Hyôe [killed in 1062?]; separately interred under a Shintoist temple in this village, they ever strive to unite once more. "The marvel, it is said, is now seldom met with; still it occurs frequently within two or three miles of the village, proceeding doubtless from the precinct of the temple. And the fact is more wonderful that the inhabitants of Kurotori themselves never hear the sounds unless they go out of the village." Concluding the narrative, the author, from his personal observation, argues the action of the tide-waves upon the earth to be the real cause of these curious sounds.

May 18.

KUMAGUSU MINAKATA.

NO. 1387, VOL. 54]

BOSNIA-HERZEGOVINA AND DALMATIA.

THE progress of prehistoric archaeology, the youngest of the inductive sciences, is one of the more important facts in the history of the intellectual development of the latter half of the nineteenth century. Up to 1870, attention was chiefly directed to the antiquity of man and his place in the geological record, and to the classification of his advance in the Neolithic, Bronze, and Iron ages in Europe. Man was proved to have lived in a remote past, not to be measured by years and under climatal and geographical conditions totally different to those now met with in Europe. The next ten years were chiefly spent in elaborating the details as to the range of Palæolithic man, and in working out the sequence of events, separating the Pleistocene period from the dawn of history. The Neolithic, Bronze, and Prehistoric Iron ages of human progress were traced far and wide over nearly the whole of the old and the greater part of the new worlds. In the last decade the centre of archaeological interest has shifted slowly in the direction of the frontier of history. On the one hand the researches of Flinders Petrie have revealed the close connection of ancient Egypt with the nations of the Mediterranean long before the rise of the Greeks, and have rendered it possible for us to use the Egyptian chronology as the standard to fix the date of prehistoric events in Southern Europe and in Asia Minor. On the other, in these latter areas, many workers, among whom Schlieman stands foremost, have revealed the manners and customs, the daily life, the modes of warfare, the habitations, fortresses and tombs of the very peoples who were in touch with Egypt. We even know, thanks to Arthur Evans, that there was a system of writing in the Ægean area long before the introduction of the Phœnician alphabet, and we may look forward to his future researches to make it intelligible.

A valuable book¹ on Bosnia-Herzegovina and Dalmatia is the last contribution to the subject. Under the modest title of "Rambles and Studies," it might very well be taken for the usual book of travels in a land of wonderful beauty, till now practically closed to the ordinary traveller. Under the Austro-Hungarian dominion, now some twenty years old, good roads have replaced the old tracks, and law and order reign instead of the brigandage of the past. New lines of railway and of steamers connect the chief centres, manufactures are encouraged, and schools for the education of both Christian and Moslem are in full swing. There are luxurious hotels in place of the old caravanserais, and the records of the past are being carefully preserved in museums, under the charge of competent scientific men, instead of being ruthlessly destroyed, as they were under the old *régime*. There are snow-covered mountains, great rivers and waterfalls, like those at Ottawa, and lakes embosomed in trees. There are ravines, like those of Miller's Dale, only larger, and caverns, and all the characteristic scenery of the limestone forms the surface of the country. The interest, however, chiefly centres in the inhabitants. The present phase of transition from Eastern to Western ideas is of special value at this time, when the cry of oppressed lands is ringing in the ears of the Western nations, because it shows with what extraordinary rapidity a people ground down to the dust for centuries by the Turk, may become happy and prosperous under a good system of local self-government. What the Austro-Hungarians have done in the Bosnia-Herzegovina, may be done by the Powers in Asia Minor and in the islands of the Ægean Sea. From this point of view Dr. Munro's well-written book is worthy of the attention of our rulers. Dr. Munro has dealt with all these things with a light and pleasant

¹"Rambles and Studies in Bosnia-Herzegovina and Dalmatia." By Robert Munro, M.A., M.D., F.R.S.E. 8vo. (Blackwood, 1895.)