

In the upright pianos of fifty years ago the hammer was hinged on to a vertical rod called the "hopper" or "sticker," which pulled it back with a variable force, the escapement being *below*, between the hopper and the key. With a shallow touch in such an instrument it is just possible to avoid bringing the escapement into action, and thus not to hasten the return of the hammer, but the effect is decidedly difficult to produce, and the mechanism has become obsolete owing to its unsatisfactory working.

In modern uprights the hammer is more free, for the escapement is a *stage higher*, between the hammer and the hopper; a piece of tape passing from the hammer to the hopper exerts an elastic pull on the hammer, assisting gravity in causing the return of the hammer, but only when the key is released.

In the grand piano the hammer is left as independent as possible, so as to ensure rapid repetition; and I have not yet found or read of a horizontal action in which any accessory mechanism can influence the return of the hammer. Therefore in the horizontal piano (and probably in the ideal upright) the hammer at the moment of hitting the wire is an unencumbered projectile, and the variables (1) and (2) are not separable.

It should be remembered that *staccato* and *legato* effects are functions, not of the hammer, but of the damper. But after all, the most important element in a good touch is the player's ability to strike the different notes in chord with different intensities. The artist instinctively gives their relative importance to the various notes of a chord as surely as to those of a melody; and this is one of the features which distinguish him from the mere executant or the most perfect player-piano.

F. J. ALLEN.

Cambridge, June 10.

A Mechanical Vacuum-Tube Regulator.

THE mechanical vacuum-tube regulator, in which the position of a movable glass sheath relatively to the kathode determines the speed of the kathode rays, mentioned in NATURE of June 19 (p. 415) as recently brought before the Cambridge Philosophical Society by Mr. R. Whiddington, is not new, Mr. J. C. M. Stanton, Mr. H. L. T. Wolff, and myself having, in 1898, devised a similar arrangement, which is described and illustrated in the discourse which I gave at the Royal Institution in that year.

We had previously shown, in a Royal Society paper read in 1897, that the speed of the kathode rays is increased by diminishing the size of the kathode itself, and what is new and interesting is Mr. Whiddington's discovery that the mechanical regulator operates by reason of the effective size of the kathode being diminished owing to the electrostatic repulsion of the rays by the negatively charged glass sheath.

A. A. CAMPBELL SWINTON.

66 Victoria Street, London, S.W., June 20.

The Crossing of Water by Ants.

It may not be new to observers of animal life, but I have been much interested in watching the common house ant here. We have an American fly-trap: the sugar was one day covered with ants, so I placed the trap on a finger-bowl standing in a plate of water. The ants, when they came to the edge of the water, ran round the bowl until convinced there was no way across, and then calmly "took to the water," and ran across it by aid of surface tension without getting their feet wet. Having presumably been home to the nest, they returned for more sugar, crossing in the same way, and this went on regularly, a steady procession crossing the water.

JOHN C. WILLIS.

Jardim Botânico, Rio de Janeiro, June 4.

NO. 2278, VOL. 91]

ETHNOGRAPHICAL WORKS.¹

(1) THIS magnificent monograph of the races of Borneo, by Dr. Hose and Mr. McDougall, illustrated by an unrivalled gallery of artistic views, covering the life of the natives of that island from the swinging-cot to the grave, will be welcomed with enthusiasm by all classes of readers. The ground had indeed to some extent been prepared by the publication in 1896 of Mr. H. Ling Roth's "Natives of Sarawak and British North Borneo," which actually contained (i., 37), seventeen years before the appearance of the present work, a "List of Tribes in Borneo," specially prepared by Dr. Charles Hose.

The book before us is a singularly happy example of joint authorship. Dr. Hose, with his record of twenty-four years' service and priceless experience under the Sarawak Government, supplemented (as he tells us himself) by his travels in other parts of Borneo, the neighbouring islands of the Archipelago, and the Malay Peninsula, was, indeed, more than ordinarily fortunate in securing a collaborator whose special qualifications as reader in mental philosophy at Oxford were crowned by his experience in the field as a member of Dr. Haddon's famous expedition to the Torres Straits and Borneo in 1898. The chief cornerstone of the book is, of course, the invaluable classification (ii., ch. xxi) of the tribes of Borneo, which is supplemented by an admirable appendix on the statistics and comparative literature of the same subject by Dr. Haddon, who correlates so far as possible the ethnological work of the best Dutch authorities. The classification in the text, described (ii., 224) as resting only "on a slight basis," gives us the mature views of Dr. Hose's unequalled experience, and satisfies us that the foundations of anthropological science in Borneo have here, once for all, been "well and truly laid."

Excluding the coastwise "Malays," the authors recognise six main ethnic groups, viz., Kayans, Kenyahs, Klemantans, Muruts, the nomadic Punans, and Ibans, or Sea "Wanderers," commonly called "Sea Dayaks." But since (ii., 245) both Kenyahs and Klemantans are "sections of the aboriginal population of nomadic hunters (Sc. Punans) who have absorbed Kayan culture," these six clearly represent but four original stocks, viz., Kenyah-Klemantan-Punans, Kayans, Muruts, and Ibans; and this agrees with the statement made elsewhere that "the present population of the island is derived from four principal sources," the last three being regarded by the authors as later immigrants.

The members of the first group are identified as "Indonesians," that much-misused term which, as

¹ (1) "The Pagan Tribes of Borneo." A description of their Physical, Moral, and Intellectual Condition, with some Discussion of their Ethnic Relations. By Dr. Charles Hose and William McDougall, F.R.S. With an Appendix on the Physical Characters of the Races of Borneo, by Dr. A. C. Haddon, F.R.S. Vol. i., pp. xv+283+143 plates. Vol. ii., pp. x+374+211 plates+4 maps. (London: Macmillan and Co., Ltd., 1912.) Price 42s. net. 2 vols.

(2) "In the Shadow of the Bush." By P. Amaury Talbot. Pp. xiv+500+plates+map. (London: W. Heinemann, 1912.) Price 18s. net.

(3) "Monumental Java." By J. F. Scheltema. Pp. xviii+302+x1 plates. (London: Macmillan and Co., Ltd., 1912.) Price 12s. 6d. net.