having tried everything between $5\frac{1}{2}$ in. cranks with a 54 in. wheel, and my present machine with $10\frac{1}{2}$ in. cranks and 108 in. gear, I can now travel greater distances and climb steeper hills with less effort on a 42 lbs. bicycle than when riding a 28 lbs. machine fitted with $6\frac{1}{2}$ in. cranks and 66 in. gear. I intend to try 11 in. cranks and 120 in. gear, but this necessitates my getting a longer and heavier machine, and it is probable that I shall lose as much as I gain.

The extraordinary ankle-play developed by long-crank men improves their walking; and, after a long hard ride, the difference between their swinging elastic step and the muscle-bound hobble of the short-crank riders is very striking.

Instead of Crompton foot-plates I have just fixed a flanged clip to each pedal, so that the inner edges of the soles of my shoes can be pushed under the clips; and they are almost as comfortable and efficient as the "Otto" straps of years ago.

WM. H. MASSEY.

Twyford, Berkshire, February 17.

Indian Corn.

IN the "Encyclopædia Britannica," vol. xv. p. 309, it is stated that no mention was ever made of maize by Eastern travellers in Africa or Asia prior to the 16th century A.D. Slight doubts about this statement have occurred to my mind lately, while I was reading the Hakluyt Society's "India in the Fifteenth Century." There, in the English translation by the late Count Wielhorsky of the "Travels" of Athanasius Nikitin, the Russian, whose Eastern travels took place about 1470-1474, when the work was written by himself, we read concerning the Indians: "They live on *Indian corn*, carrots with oil, and different herbs" (p. 17). Has this mention of the cereal any weight to countenance the theories which seek to assert that maize was known in the East before the discovery of the Western Continent? Or, does what is meant or translated by the word *Indian corn* here differ materially from *Zea Mays*?

Apropos of these queries, I may mention that A. de Candolle is in error in his post-dating the introduction of maize into Japan on the sole ground that Kaempfer (who was there during 1690-92) does not mention it.¹ According to a native work (Kikuoka, "Kindai Seidan," 1733, lib. 2, § 4), maize was introduced into the islands about the beginning of the period of Tenshō (1573-91). After Sweet Sorghum (*Sorghum saccharatum*), of earlier introduction with the name *Morokoshi-Kibi* (i.e. Chinese-Millet), maize was called *Tō-Morokoshi* (i.e. Chinese-Chinese-Millet) in the eastern provinces, where, of course, its propagation followed that in the western parts. In the dialect of the latter, where the people were more directly concerned with its introduction, maize was named *Namban-Kibi*, or Millet of the Nambans (Spaniards and Portuguese), who were entirely excluded from the empire since 1639, which thus would stand as latest possible date of the introduction.

KUMAGUSU MINAKATA.

1 Crescent Place, South Kensington, S.W.

The Production of Electrolytic Copper.

IN a note on the production of electrolytic copper, on p. 371 of NATURE of February 15, it is stated that "Mr. S. Cowper-Coles has hit upon a new plan, in which the copper is deposited on a vertical mandril, which is caused to rotate at a very rapid rate. . . . As a consequence, a smooth and dense deposit has been obtained with current densities approaching 200 amperes per square foot." In reference to this I should like to point out that the idea of rotating the kathode with a view to obtaining greater rates of disposition is an old one. We have had in use at the Owens College for the last seven years a copper depositing tank in which the kathode consists of a vertical mandril 9 inches long and 3 inches diameter kept in rapid rotation, and capable of receiving a good copper deposit with a current of 100 amperes. The arrangement was devised by Mr. Henry Wilde, F.R.S., to illustrate the working of his patent, No. 4515, of 1875, and differs little from that used by Mr. Cowper-Coles. The mandril is driven from above, so that a stuffing-box in the bottom of the tank is unnecessary.

CHARLES H. LEES.

The Owens College, Manchester, February 19.

¹ "Origin of Cultivated Plants," p. 392.

THE WEST INDIAN AGRICULTURAL CONFERENCE.

THE second West Indian Agricultural Conference was opened on January 6 in the hall of the House of Assembly, Barbados, under the presidency of Dr. D. Morris, C.M.G., Imperial Commissioner of Agriculture for the West Indies. There were forty representatives present, including the heads of all the Botanical, Chemical and Educational Departments, as well as the representatives of the principal Agricultural Societies in the West Indies. Some of these gentlemen had journeyed for the best part of a week to take part in the two days' labour that awaited them.

The representatives were received in the hall of the House of Assembly at 10.30 a.m. by his Excellency Sir James Shaw Hay, the Governor, who opened the conference with a short address of congratulation to the Department of Agriculture, and of welcome to the visitors from other Colonies.

The President then delivered his address, which summarised the work done by the Imperial Department during the preceding year, and alluded to some of the problems which were expected to be discussed at the conference: the best seedling canes and their record, Imperial aid for co-operative central factories, reducing cost of cultivation, subsidiary industries which have done so much for Jamaica, Trinidad and Grenada, agricultural education and treatment of diseased plants, were subjects that came under review.

Prof. J. B. Harrison (British Guiana) then read a paper, "Notes on Sugar Cane Experiments," the joint production of Mr. G. S. Jenman and himself, followed by one, entitled "Past and Future Work in Sugar Cane Manurial Experiments," by Prof. d'Albuquerque (Barbados). Both papers covered somewhat the same ground, and were followed by a long discussion. It was generally agreed that nitrogen is the constituent of cane manures which chiefly governs the yield; but the experiments upon the use of phosphatic manures have been contradictory in different places. The application of potash and lime to cane fields gives profitable results in soils where these constituents of plant food are deficient. A discussion of considerable length took place upon the best and most economical way to conserve and utilise the nitrogen and mineral constituents of plant food in farmyard manure; and the desirability of extended trial of leguminous green dressing was urged upon West Indian planters.

Prof. d'Albuquerque, in the next paper, explained "A Method of using Control Plots in Experimental Field Cultivation." The method, which is only applicable where small plots of, say, one-thirtieth of an acre are used, partly consists in weighing the crops from a number of small no-manure (control) plots not far apart, and calculating the no-manure yield of the intervening plots on the assumption that in a uniform field the change of fertility is continuous from one control plot to the near next one. The other part of the method depends upon the manipulation of the figures obtained from the manured plots in relation to the calculated no-manure yields, and the interpretation of results.

The same author in the next paper, "The Possibility of Improving the Sugar Cane (a) by Artificial Cross-fertilisation, (b) by Chemical Selection of 'Seed Cane,'" under the first head argued that crossing different varieties would lead to the production of canes possessing desirable characters derived from both parents, and detailed some methods by which systematic experiments should be carried out. The second part of the paper dealt with the feasibility of increasing the sugar productiveness of a given variety of sugar-cane by propagating it with tops cut from canes richer than the average of the variety; the practical difficulty is to find a sure test of an inherently rich cane, as opposed to a cane rich because it is riper or more favourably situated.