ON THE COMPOSITION OF DIFFERENT KINDS OF COCOA.

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It is well known, that different varieties of cocoa fetch very different prices; but as far as I am aware, no careful examination has been made to ascertain if these differences are caused by any difference in their composition regarded as articles of food, or if they be due solely to differences in flavour, which after all may be only matters of taste. In none of the published analysis of cocoa which I have seen, is any mention made of the kind of bean analysed, it is therefore not surprising that the results published vary very considerably. Thus, while in Dr. Hassall's book we are told that cocoa contains albuminoid matter 16·7 per cent.; in Dr. Parkes', Practical Hygiene, it is stated to contain from 13 to 18 per cent. of protein substance. In neither case is it mentioned, whether the bean was examined raw, or after roasting. Having through the kindness of a friend obtained samples of various cocoa beans, both raw and roasted, which he assured me were unmixed, I made a number of analyses of the roasted beans, which as far as food is concerned, are by far the most interesting, as I believe the raw bean is never employed. The results are shown in the following table. They are not so complete as I had hoped to make them, but they comprise the more important constituents, and as such analyses can be done only in the intervals of more pressing work, I prefer leaving the remaining less important constituents for a future communication. In the first column of the Table, is noted the proportion of husk in the different varieties. This difference appears to be mainly due to the husk in some kinds being much thicker than in others; in all cases these thick husks separate much more from the bean in the process of roasting, and can be taken off with much greater facility. The other estimations are made on the roasted bean after removal of the husk. The albuminoids are calculated from the total nitrogen found by combustion with soda lime, the nitrogen contained in the theobromine is thus included, but in the roasted bean this is so small that the difference is hardly worth consideration; hereafter, I hope to estimate the theobromine in the different varieties, as well as the starch, gum, cellulose, &c. It will be observed, that in none of the above samples do the albuminoid substances reach the amount mentioned by Hassall or Parkes, but as neither of them give the method by which the albuminoids were ascertained, no attempt can be made to account for the difference. The amount of these substances in Para, which is about the lowest priced variety, is, with one exception, the highest in the table, so that, viewed as an article of food it is superior to some of the more expensive kinds. The soluble ash consists to a great extent of phosphate of potash, the phosphoric acid in the portion insoluble in water being mostly if not entirely combined with magnesia.

RESULT OF EXAMINATION OF ROASTED BEAN AFTER REMOVAL OF HUSK.										
	Per Cent- age of Husk.	Fat.	Nitrogen.	Albuminoid Substances.	Ash.	Ash Soluble in Water.	Ash Soluble in H Cl.	Phosphoric Acid in Ash, cal- culated as H ₃ PO ₄ .	Moisture.	Starch, Gum, Cellulose, &c.
CARACAS ...	13·8	48·4	1·76	11·14	3·95	2·15	1·80	1·54	4·32	32·19
*TRINIDAD...	15·5	49·4	1·76	11·14	2·80	·9	1·90	·93	3·84	32·82
SURINAM ...	15·5	54·4	1·76	11·14	2·35	·80	1·55	1·23	3·76	28·35
GUAYAQUIL.	11·5	49·8	2·06	13·03	3·50	1·75	1·75	1·87	4·14	30·47
GRENADA ...	14·6	45·6	1·96	12·40	2·40	·60	1·80	1·35	3·90	35·70
BAHIA	9·6	50·3	1·17	7·40	2·60	·90	1·70	1·26	4·40	35·30
CUBA	12·0	45·3	1·37	8·67	2·90	·95	1·95	1·13	3·72	39·41
PARA	8·5	54·0	2·00	12·66	3·05	1·40	1·65	1·00	3·96	26·33

* I am inclined to think that the Trinidad sample was not of the finest quality.