Notes.

The Editor wishes to point out that the pages of the Journal are open for the inclusion of short notes dealing with analytical practice and kindred matters. Such notes are submitted to the Publication Committee in the usual manner.

BORIC ACID IN ORANGES.

RECENTLY we had referred to us, by one of the authorities for whom we act as Public Analysts, seven samples of oranges; comprising three Californian, three South African, and one West Indian brand.

These samples were submitted to us because it was believed that oranges were being treated with an antiseptic.

Six of the seven samples were wrapped in papers, in which we found no antiseptic, nor did we find any upon the surface of the peels of any of the samples, but we found that in all the samples the peel and the pulp, which were analysed separately in each case, contained boric acid.

The results obtained were as follows:—

	PEEL.		PULP.	
	H_3BO_3 Per Cent.	Grains per lb.	H_3BO_3 Per Cent.	Grains per lb.
1.	0·033	2·31	0·006	0·42
2.	0·022	1·54	0·002	0·14
3.	0·012	0·84	0·002	0·14
4.	0·008	0·56	0·002	0·14
5.	0·017	1·19	0·004	0·28
6.	0·020	1·40	0·008	0·56
7.	0·005	0·035	0·004	0·28
	Average	1·12		0·28

The average weights of the peel and pulp were 30 and 120 grms. respectively.

Samples Nos. 4, 5 and 7 were Californian, Nos. 1, 3, and 6 South African, and No. 2 West Indian; all were wrapped with the exception of No. 7.

Boric acid has before been found to be a natural constituent of oranges, and of a large number of other vegetable substances, in quantities comparable with

those cited above; so that the detection of such quantities of boric acid affords no evidence that it has been purposely added.

The occurrence of boric acid as a widely distributed natural constituent of many food stuffs, animal and vegetable (as well as of the common salt used in their preservation), is of special interest in view of the fact that its use is now prohibited under the Public Health (Preservatives, etc., in Food) Regulations, 1925; and we consider it of sufficient importance to call attention to the matter.

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INSTABILITY OF PRECIPITIN ANTI-SERA IN THE TROPICS.

I HAVE read with great interest Mr. Bamford's note on this question (ANALYST, October, 1928, p. 531), and believe that it will help to throw light on a difficult problem.

Mr. Bamford suggests bacterial action as the cause of instability. This is a tempting hypothesis, and the first of which one thinks, although in this laboratory it has been found that *all* anti-human precipitin sera (in sealed ampoules) lose their potency in three months.

But is it not significant that many workers (including those in this laboratory) have obtained good reactions with putrid human blood, which must necessarily have undergone bacterial decomposition? It cannot be inferred that bacterially decomposed anti-sera will also react, but good reactions have been obtained in this laboratory from anti-sera which were apparently decomposed. It is, of course, impossible to use such anti-sera for tests to be quoted in the Courts. These considerations have suggested a doubt as to bacterial decomposition being the cause of instability of anti-sera.

Mr. Bamford mentions anti-sera for (apparently) other than the human species which have been proved stable (? albeit weakened), though submitted to variations of temperature (up to 15° C.) for five years. It would be interesting to know if any anti-human sera were included. Is it possible that anti-sera for species other than human are more stable than human anti-sera? Or is the cause of their (apparent) stability the powerful character of the original anti-sera?

Variability in temperature has seemed the only hypothesis left to account for instability of anti-sera. It is, perhaps, possible that anti-sera would lose their potency with comparative rapidity if maintained at the blood temperature of the rabbit or other species used as reservoir. Mr. Bamford mentions various anti-sera which had been subjected to temperatures of 30–35° C. for twelve days before they were tested. At that time they were satisfactory, but for what length of time would they have remained stable?

From a study of the literature and from some experience the picture one has formed of these anti-sera is that of unstable compounds, produced at the blood temperature (probably of the rabbit), which are always tending to revert to their original molecular constitutions, particularly at the temperature of the blood of the rabbit or other animal used for their preparation. Anti-sera made from a bird might possibly be more stable than anti-sera made from a mammal.

The subject is obscure, and all chemists interested in anti-serum tests will welcome contributions thereto.

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THE PRODUCTION OF UNIFORM STAINS IN THE GUTZEIT TEST FOR ARSENIC.

LERRIGO (ANALYST, **1928, 53,** 90) has called attention to the occasional difficulty experienced in removing mercuric chloride papers which have been attached with seccotine to the top of the tube of the B.P. **1914** (Appendix VI) apparatus.

I find that tearing of the paper is avoided by the use of "Gloy"; a square (length of side, 18 mm.) of mercuric chloride paper is laid on a clean surface on the table and the rim of the glass tube, previously treated with "Gloy," firmly pressed upon the paper. The attached rubber cork is then re-inserted in the bottle. The paper is afterwards removed with greater ease than would be the case with a disc cut to the exact size of the top of the tube.

Apart from the 20 c.c. tap funnel the apparatus conforms to the requirements laid down in the B.P. 1914 (Appendix VI).

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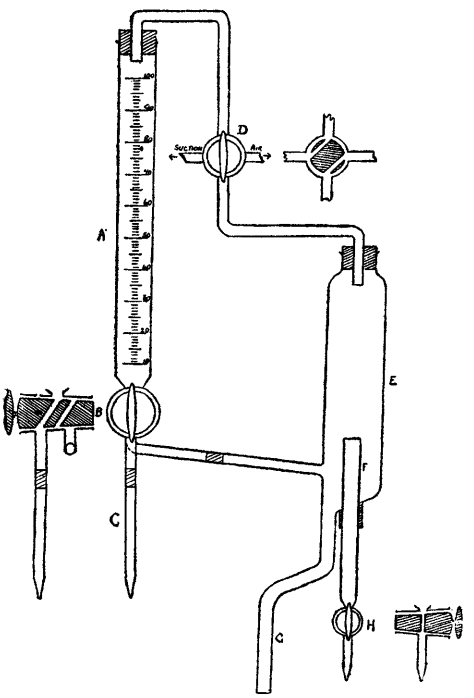
AN IMPROVED MISCOMETER.

THE miscometer described in the ANALYST (1926, **51**, 453) has been replaced by an alternative form of apparatus. In the new apparatus the measuring device is more satisfactory, and the measuring chamber has been lengthened and narrowed. The apparatus is simpler to manipulate and is cheaper.



It will be seen from the figure that the new measuring device consists of a burette instead of a hollow stopper. The hollow stopper proved expensive to make and difficult to graduate accurately. The burette may be made quite accurate by grinding down the top to the required dimension. Different burettes may be fitted to deliver quantities of different volumes.

The new miscometer is used in the following manner :—With the suction pump operating and connected with the measuring chamber (A), the samples to be made composite are drawn in turn into the measuring chamber by opening the stopcock (B), which is so left that the inlet tube (C) drains. The samples are mixed by turning the stopcock (B) so that it connects the two chambers. Air is thus drawn through the mixture. When mixing is complete the stopcock (D) is turned through an angle of 90°. The composite sample is thus drawn into the second chamber (E). During this operation the burette (F) fills up, and at the end of the operation the remainder of the composite sample flows out (by gravity) through the outlet tube (G) into any suitable receptacle. Stopcocks (B) and (D) are then closed, and the measured quantity is drawn off by opening stopcock (H).

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